3 OVERVIEW OF VIETNAM'S TRANSPORT SECTOR

General

The transport sector of Vietnam consists of the full range of transport modes: road, railway, inland waterway, coastal and sea shipping, and aviation. The transport sector grew significantly during the 1990s. Interprovincial traffic flow, for instance, increased between 1992 and 1999 by 2.1 and 2.9 times for passenger and goods, respectively. This was supported by the development of transport infrastructure during the 1990s and the effects of partial transport deregulation. In addition to general reforms, the transport sector saw extensive commercialization. Various new services commenced such as container transport on road, rail and inland waterway, bonded transport, ICD operation, scheduled liner operation even in coastal shipping, liberalized transit transport between Lao PDR, etc.

The active investment in transport infrastructure with particular regard to the rehabilitation and upgrading of all modes, including urban and rural transport, has been continuing. There are 42 transport projects that are either ongoing or committed. Many are expected to be completed by 2000-2003. The projects have a total cost of US$ 5.7 billion. Of this amount, 72% is for roads followed by air (12%), ports (6%), railway (2%), inland waterway (2%), rural transport (3%), and urban transport (3%).

At present though, Vietnam's transport infrastructure and services are still weak and there are a number of areas that need immediate attention: infrastructure is still needed to fill the gaps and to meet the growing demand in many locations. Institutional arrangements and regulatory framework for transport services need to be further improved to facilitate the smooth flow of goods and people under a competitive environment. There is also a growing concern among the government and donors on how to establish a mechanism to promote development of the transport sector more effectively, to include, among others, building a sustainable infrastructure maintenance mechanism system, expanding own source of funds, strengthening operation and management capacity, balancing the investment among the regions as well as among modes, encouraging private sector participation, implementing institutional reforms (especially of SOEs), and modernizing infrastructure and management.

Road and Road Transport

Vietnam has a total road network of over 200,000 km as of 1999. National roads, however, account for merely 15,250 km, and provincial and district roads account for 17,449 km and 36,372 km, respectively. Village roads, comprising 131,000 km, are considered rural roads.[9] The entire road network is relatively well developed

[9] In addition to these roads, there are urban roads.

Figure 3.1-a
National Transport Network: North to Central

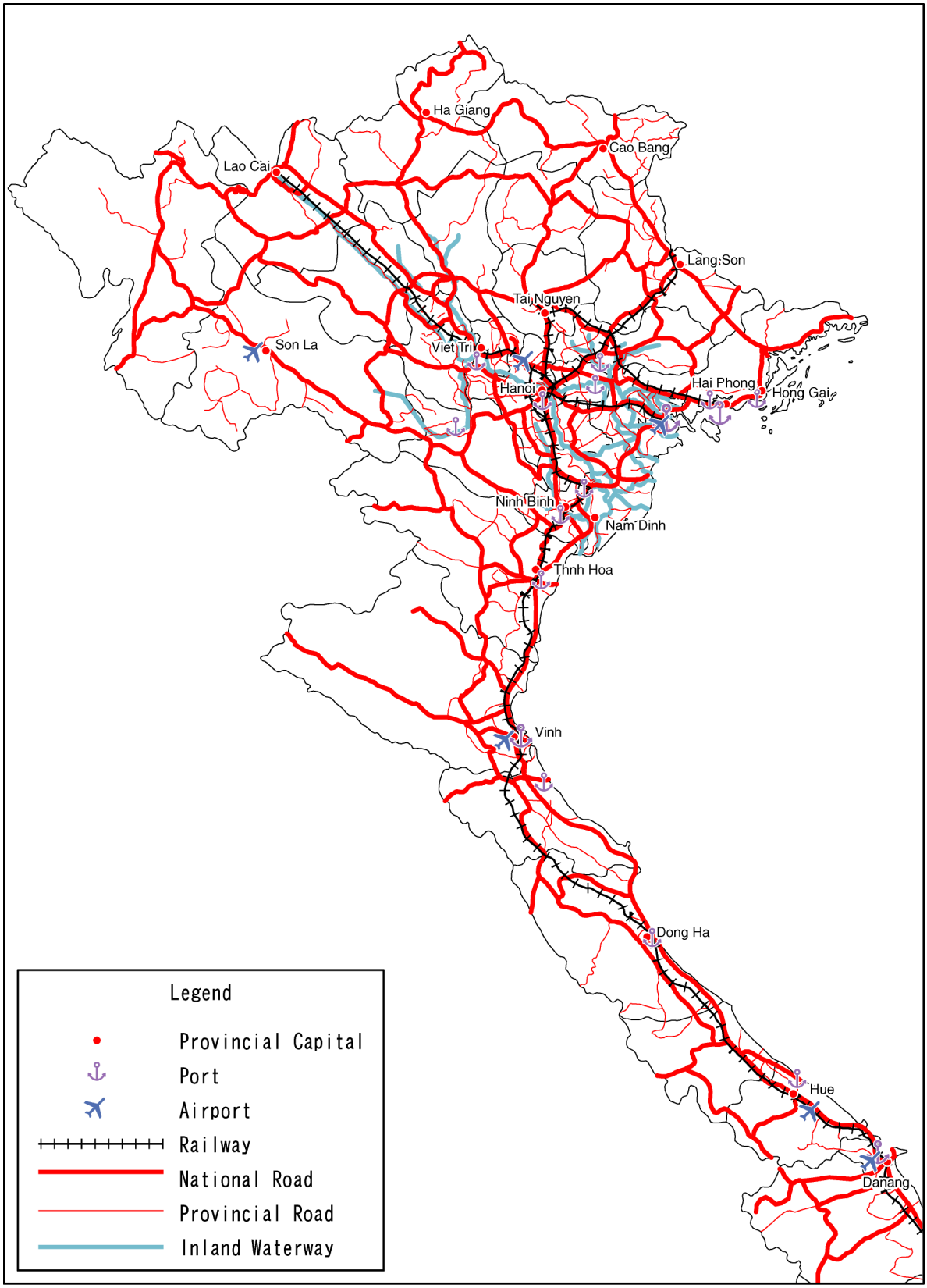
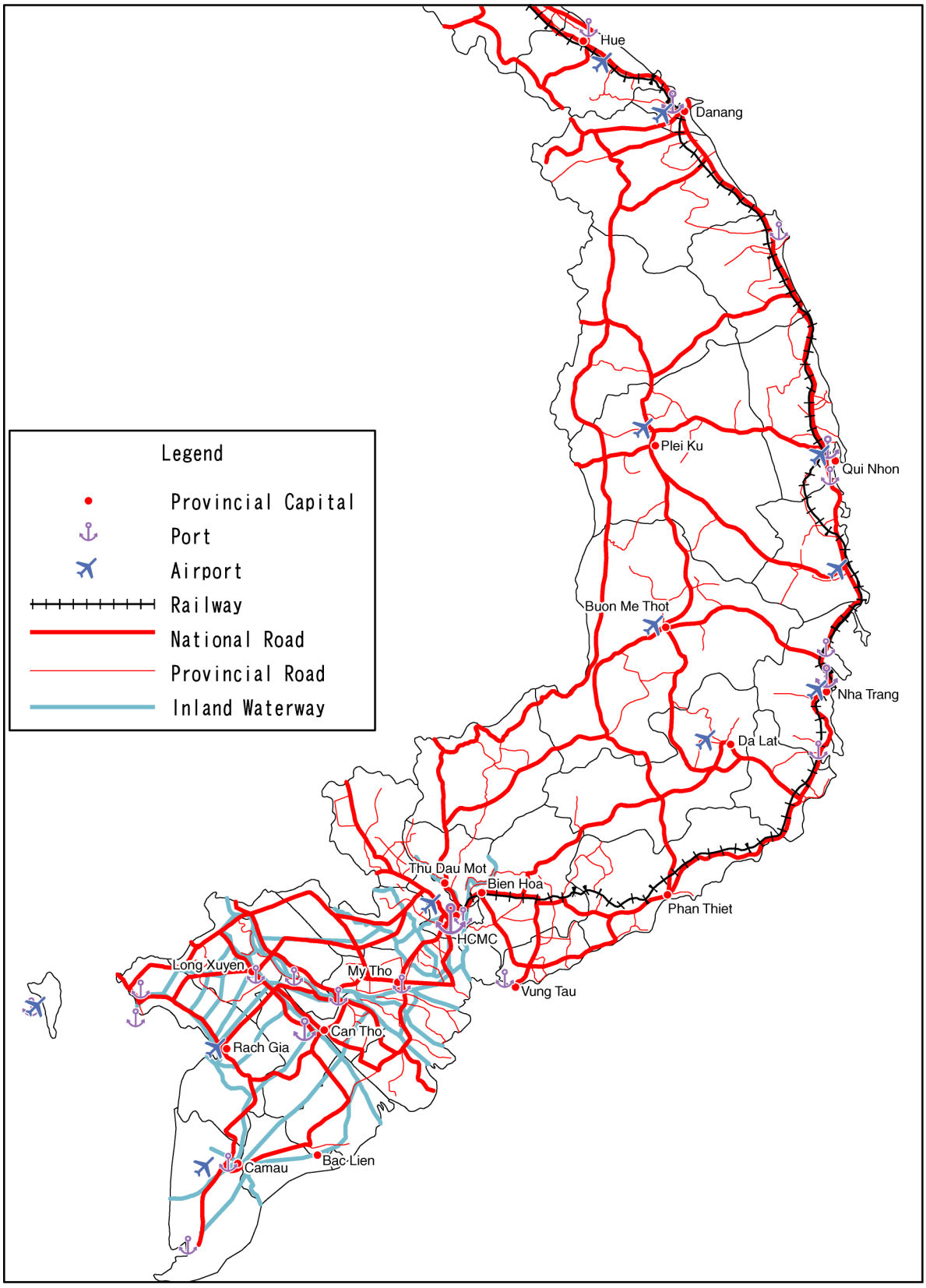


Figure 3.1-b
National Transport Network: Central to South



but poor in quality. Only 60% of national roads and 27% of provincial are paved. The poor condition of rural roads makes access to many villages difficult.[10] Motorization level is still low but the number of vehicles has been growing rapidly.[11]

The main issues confronting the subsector include (1) Poor quality of service: highly competitive truck services are very cheap by world standards but service quality is low. Bus services are comparatively less competitive and some inefficient bus SOEs achieve poor cost recovery, (2) Poor primary/secondary roads: many roads are in poor condition because of the lack of maintenance systems, efficient organizations and working methods, and finance. Low design standards hinder operation of modern large trucks and buses, (3) Lack of tertiary roads: many roads effectively only exist on the map; (4) Lack of legal framework: there is no road act and implementing regulations, only a provisional decree defining the organization of VRA and many gaps in definitions of guidance documents and procedures for road management; (5) Inadequate road safety programs: government has yet to approve the strategy for road safety and define a concrete program of improvements. The cost of road accidents is huge – about 1-2% of GDP; (6) Weak infrastructure management, especially at provincial level: lack of capacity for planning, guiding, controlling and monitoring infrastructure. New road/bridge/pavement management systems are required. Cumbersome decision-making processes hinder improvement; (7) Lack of sustainable financing: insufficient funds are allocated to maintenance, there is weak monitoring of fund allocation and no reliable basis for forecasting future funds.

Railway Transport

Railway operates over 2,600 route-km, comprising seven main lines and several branch lines. The network is all of single track with 1,000 mm gauge, 1,435 mm gauge and dual-gauge sections. Vietnam's railway subsector has two divisions: transport and infrastructure. Government is responsible for infrastructure and VR pays government 10% of its operating revenue as rent for the infrastructure. VR, an independent SOE under the MOT, has a total of about 42,000 employees including three transport unions (19,000 employees), 48 SOEs (22,600 employees involved in track maintenance, construction, etc.) and a project management unit, among others.

In 1999, VR operated 65 passenger trains and 91 freight trains daily.[12] It has 339 diesel locomotives, 750 passenger cars and 4,338 freight cars. VR transported 9.7 million passengers (2.5 billion passenger-km) in 1998 and 4.8 million tons (1.5 billion ton-km) in 1997. Tracks, tunnels, bridges, and signals are generally in poor condition but railways are relatively well operated technically. The Transport Division generated a revenue of VND 900-950 billion in 1996-1998, of which

[10] Motor vehicles cannot access 606 out of 9,816 commune centers.

[11] In 1996 the number of registered vehicles was 132,800 cars, 66,500 buses and 201,400 trucks. The number of motorcycles was 4,158,989.

[12] There are five Hanoi-Saigon (taking 34 hours) and 12 Hanoi-Hai Phong (2 hours) passenger trains.

roughly a half came from passenger transport. Expenditure exceeded revenue slightly.

The subsector faces the following issues: (1) Lack of market orientation: the railway does not have a proper legal basis, is mainly driven by production concerns and is not successful in finding new markets; (2) Low utilization of assets: track utilization is low. Locomotive utilization is very poor. Much equipment is unserviceable and staff productivity is low; (3) Huge backlog of infrastructure maintenance: past neglect means that much has to be spent on track, bridges and tunnels just to sustain operations in the short-term. Most of the track needs replacing in the next ten years; (4) Lack of modern business tools: the management cannot assess the costs and revenues of carrying particular traffic, assess alternative ways of utilizing assets, and predict the financial effects of alternative business strategies; (5) Inadequate financial/performance agreement between railway and government: the infrastructure payment is not directly related to costs incurred (variable maintenance costs and costs on different lines). There is no long-term agreement on investment, subsidy and operating/financial performance.

Inland Waterway Transport

About 8,000 km of rivers are used for inland waterway transport, of which 6,230 km are managed by the VIWA and the rest by local governments. Transport services are mainly provided by SOE operators in the north and by private operators in the south. Although inland waterways play an important role in the deltas, navigability is reduced due to a substantial dredging backlog and lack of navigational facilities, among other reasons. Moreover, facilities and equipment of river ports are mostly in poor condition.

Other issues besetting the subsector are (1) Poor port services: ports are in poor condition, have few facilities and are badly managed; (2) Weak market mechanisms: there is still major traffic handled by SOE operators under long-term contracts which have not been awarded competitively; (3) Inadequate dredging and navigational aids: lack of lights means that safe nighttime navigation is impossible. Limited or uncertain draft constrains use of large vessels; (4) Lack of legal framework: there is no inland water act and implementing regulations. There is only a provisional decree defining the organization of VIWA, and many gaps in definitions of guidance documents and procedures for waterway management; (5) Weak infrastructure management: lack of capacity in planning, guidance, control and monitoring. Completely new management systems are required (data bases, maintenance, revenue collection etc.). There is no clear division of responsibility for management of sea-cum-river ways, between VINAMARINE and VIWA; (6) Lack of sustainable financing: more finance is required for maintenance but there is no mechanism yet for providing predictable levels of finance.

Maritime Transport

Ports: Vietnam's ports are owned and operated by the state sector except for a few.[13] They are managed by VINAMARINE (Nghe Tinh, Quy Nhon, Nha Trang), Vietnam National Shipping Lines (VINALINES, managing Hai Phong, Saigon, Danang, Can Tho), local governments, and ministries other than the MOT and their SOEs. Ports are broadly grouped into three: north (Hai Phong), central (Danang) and south (Saigon). They suffer from shallow water depth [14], inadequate infrastructure and cargo handling equipment. In spite of these constraints, cargo traffic through Hai Phong and Saigon has been constantly increasing, except in 1997 when the country's economy was hard hit by the Asian financial crisis. In 1999, Saigon and Hai Phong handled 8.3 million tons and 6.3 million tons, respectively. Container vessels on longer voyages seek to avoid direct calls, however, where the entry is through long channels. Hence, port expansion, especially in the north and south is being promoted including the development of new ports at Cai Lan and Vung Tau-Thi Vai.

Shipping: Some 10 Vietnamese shipping operators owned by the state and local government, joint ventures, etc, and about 25 foreign shipping operators are engaged in the country's foreign trade. VINALINES, which holds 60% of the total national fleet, shared only 11% of the total foreign trade due to stiff competition from foreign operators. Domestic shipping consists of sea-cum-river shipping in the delta areas and coastal shipping carrying mainly agricultural, mining and industrial products. Container traffic for coastal shipping is gradually becoming significant. The performance of ports and shipping are related. The small capacity and low efficiency of ports discourage foreign shipping operators from assigning modern vessels to Vietnam routes.

Maritime Subsector Issues: The issues facing maritime transport include (1) Limited competition in coastal shipping: most traffic is carried by the members of VINALINES so real competition has not yet been achieved; (2) Lack of experienced management: Vietnamese ship managers lack the experience to compete with foreign operators; (3) Poor condition of shipping fleet: much of the fleet is obsolete and in poor condition and cannot operate efficiently; (4) Inadequate port services and charging system: cargo is lost or damaged and ships spend excessive times in ports. Port charges are not closely related to costs incurred at each port; (5) Lack of modern handling methods: lack of modern equipment means long times loading/unloading, deterring investment in modern vessels; (6) Inadequate dredging: draft limitations limit the size of vessel and times of sailings; (7) Incomplete legal framework: VINAMARINE has insufficient planning authority. There are insufficient regulations defining ship inspections and handling compensation claims for oil spills. Virtually no regulations and guidance documents exist for infrastructure maintenance; (8) Weak maritime management:

[13] Vietnam International Container Terminal (VICT) is a joint venture project which commenced operation in 1998.

[14] At present, Hai Phong can barely accommodate vessels of more than 7,000 DWT, while Saigon River allows vessels of more or less 20,000 DWT.

there are inadequate management systems for infrastructure management, database management, pilotage management, project implementation; (9) Need to attract foreign investment: the country needs to exploit opportunities for tapping foreign investment in modern port facilities.

Civil Aviation Transport

There are 135 airports/airstrips for civil, military and police use in the country. The CAAV is responsible for 18 airports and air navigation services. Three major airports in Hanoi, Danang and Ho Chi Minh City (HCMC) handle 1.6 million, 0.4 million and 5 million passengers in 1998, respectively. Two airlines, both members of the Vietnam Airlines Corporation (VAC), operate in the country - the dominant one is Vietnam Airlines, which accounts for 37% of international traffic to/from Vietnam and 94% of the domestic demand.

The subsector is confronted by various issues, including (1) Limited competition: all Vietnamese airline operators are part of VAC and there is limited real competition. There is no competition in supply of support services in airports; (2) Lack of experienced management: the airlines lack management with extensive business experience. Under forthcoming regional agreements on airline service liberalization, this will handicap Vietnamese airlines; (3) Poor airport facilities: insufficient capacity and inadequate design of passenger terminals constrains service levels; (4) Need to develop new CNS/ATM system: under international agreements, Vietnam will install a new air traffic management system, requiring new investment and training; (5) Inadequate legal framework: regulations are lacking for implementing higher technical and environmental standards. There is no decree defining the organization of Vietnam Air Traffic Management (VATM), which limits management at regional level; (6) Weak infrastructure management: regulatory and commercial activities have still not been separated within the airport authorities. Weak planning capacity and coordination procedures results in poor plans and excessive costs; (7) Lack of sustainable financing: airport and ATM charges are not related to costs of infrastructure provision.

Rural Transport

While many primary roads are being rehabilitated, there is growing concern to improve accessibility in rural areas where 80% of the country's population resides. The main issues in rural transport include (1) Limited all-weather access by motor vehicle: some communes are inaccessible by motor vehicle at some times of the year, adversely affecting agricultural production and marketing and development of the rural economy and services generally; (2) Price controls on transport services: some truck tariffs in mountainous regions are controlled by government which deters operators from offering services; (3) Weak infrastructure management: planning and maintenance systems have not yet been adapted for implementation under conditions found in Vietnam; (4) Lack of sustainable financing: there is no mechanism for providing predictable funds for road maintenance.

Cross-border Transport

A total of 24 provinces in Vietnam share the long border (4,639 km) with the adjoining countries of China, Lao PDR and Cambodia.[15] The significance of cross-border transport can be viewed from both the regional and local perspectives. The current initiatives for regional cooperation through the Association of Southeast Asian Nations (ASEAN), Greater Mekong Subregion (GMS) and other bilateral arrangements[16] require the integration of transport networks and facilitation of transport services, which are expected to expand with socio-economic activities of the countries. The cross-border transport in Vietnam's context is also important from the rural development viewpoint because most of the defined corridors cover rural and otherwise isolated mountainous areas where accessibility is extremely poor and poverty prevails. The main issues in cross-border transport include (1) Limited and uncertain traffic levels: cross-border flows are very limited and vary significantly; (2) Limited physical infrastructure: the access links have inadequate capacity, especially for long distance transport. Border facilities are also lacking; (3) Institutional bottlenecks: bilateral rules and regulations hinder transport development, such as through movement of vehicles between countries.

Multimodal Transport

Seamless transport services at reasonable cost to make the transport sector more competitive has become an increasingly critical objective, both for international and interprovincial transport of goods. The multimodal transport concept is being recognized as important in Vietnam but services are still very much constrained due to various factors such as (1) Lack of guaranteed scheduled services: there are no scheduled services on trunk modes such as coastal shipping and the railway which allow predictable delivery times of shipments; (2) Lack of cargo information systems: no transporters can yet offer information about the whereabouts of the customers' cargoes at any particular time; (3) Lack of modern cargo handling methods: the lack of facilities for handling containers and pallets hinders development of effective links between modes; (4) Poor access links to ports: access roads to new ports are not completed on time and there are restrictions on truck movements through cities and over weak bridges; (5) Physical constraints on containerization: there are few roads designed for carrying container trucks. Any container truck needs special authorization for operation because it just exceeds the legal height limitation; (6) Bureaucratic bottlenecks: customs procedures prevent multimodal operators from acting on the customer's behalf. Procedures are not designed to enable efficient transport and clearance; (7) Lack of legal framework: there is no legal basis for multimodal transport; (8) Need to attract foreign investment: the country needs to exploit opportunities for

[15] Six, ten and eight Vietnamese provinces share the border with China, Lao PDR and Cambodia, respectively.

[16] ASEAN promotes the ASEAN Highway and Singapore-Kunming Railway Projects. The GMS scheme focuses coordinated development in the subregion (Cambodia, Lao PDR, Myanmar, Thailand, Vietnam and the Yunnan Province of China) including east-west corridors.

tapping foreign investment in new facilities and services, but there are restrictions on foreign investment.

Sector Management

Various subsector issues mentioned above are not specific to particular subsectors but require a sector-wide approach. Key transport sector management issues, among others, include (1) Weak management: decision-making is slow or ineffective because of overcentralized organizations, overlapping or unclear responsibilities, lack of guidance documents and procedures, and lack of reliable information for monitoring policy implementation; (2) Need to divest remaining commercial functions: although much has been achieved, there remain many commercial activities within agencies responsible for regulatory oversight (transport services and support functions); (3) Lack of trained staff and training policies: more staff trained in specialist/technical fields are required, and decision-makers need to be able to interpret technical information given to them. Existing staff need training in new management systems and procedures. The MOT has yet to identify specific training strategies and programs; (4) Inadequate level-playing-field and basis for cost recovery: the transport regulations do not yet provide a basis for effective competition between or within modes. Charges paid by users do not always cover costs of infrastructure and there are distortions caused by price controls and other government interventions (some of which deter competition and private involvement in the transport sector); (5) Slow pace of SOE reform: although government gives high priority to equitization, little progress has been made; (6) Need to generate new revenue sources: to fund the development of infrastructure and investment in transport equipment new sources of investment funds are required.

4 CONTEXT OF THE TRANSPORT SECTOR

National Development Goals

In the process of development, Vietnam will encounter drastic internal and external changes. Urbanization[17] will accelerate as the economy grows and diversifies. Constraints in increasing agricultural productivity will drive urban migration. Globalization of the economy and information and socio-cultural exchanges are inescapable. Their impact will be significant and advantageous to the country, if adequately managed. Technological development, which has been taking place all over the world, will likewise affect both the country's economic and industrial sectors in many ways.

The transport sector is a key component of national development and a strategic means to support and facilitate socio-economic development at different levels, from the national to the local - that is, the community. Thus the transport sector should be an integral part of the national development framework and strategies, which are the starting points of the VITRANSS. The current national development goals are briefly as follows:

- Economic Growth: Lessons from past experiences of the country as well as those of others indicate that sustainable economic growth is the most critical basis of a country's socio-economic development. Achieving a high, sustainable rate of economic growth with increasing economic efficiency is thus targeted.
- Industrialization and Modernization: Sustainable economic growth is achievable only when the multisectoral market economy is continuously developed in association with further industrialization and modernization of industries and economies, and the resultant increase in productivity.
- Poverty Alleviation: The incidence of poverty in the country is still high and will not decline quickly in spite of the significant economic growth expected in the future. Poverty in Vietnam is much more significant in rural, especially remote, areas than in the cities.
- Equity: Since major infrastructure is concentrated in a few locations, mostly the south and north growth areas and partly in the central region, promoting the harmonious economic development of all regions is a primary policy issue of the government.
- Financial Sustainability: At present, many development projects rely on ODA for funding due to the lack of local financing capability. Market mechanisms are yet to function efficiently, and costs of services and products are often not properly paid for by users or beneficiaries. National savings have to be increased to establish the preconditions for a more sustainable and rapid development in the next era.

[17] Urbanization level (% of urban population to total population) of Vietnam is still very low (23.3%) compared to other countries in southeast Asia.

Regional Development Framework

Regional Development Trend and Policy: In general, industrialization and urbanization are expected to be at the forefront of the development process. The agricultural sector is expected to grow. With increasing mechanization, the sector is expected to require less labor. Displaced workers can then be reemployed in the secondary and tertiary sectors. The plan's targets require the mobilization of domestic and foreign savings and are conditional on major achievements in human resource development to provide a workforce with the necessary skills to meet the demands of an industrializing economy.

The economic growth of the country still differs considerably by region. The south is the fastest growing, followed by the north and then central Vietnam. This trend has continued for more than a decade. Regional disparities have not been narrowed; they have even increased between urban and rural areas. Consequently, the disparity between urban areas of fast-growing regions and rural areas of mountainous regions has widened.

To bridge this gap and to meet the long-term development goals of industrialization and modernization, the government's five-year plan (1996 – 2000) has laid out a number of broad objectives, as stated in the previous section. Moreover, an increasing number of programs have focused on rural development and poverty alleviation.

Regional Development Perspective and Framework for the VITRANSS: The national and regional development policy has been interpreted in terms of population, urbanization level and gross regional domestic product (GRDP) and its sectoral composition and industrial outputs by major commodity groups at regional and provincial levels. This regional development perspective provides a basis for projecting transport demand and developing a transport plan. The consequences of the planned socio-economic development in Vietnam during the next two decades (1998/9 – 2020) are summarized as follows:

- Population will increase from 76 million to 110 million (1.4 times).
- GDP will increase from VND 264 trillion to VND 885-1.144 trillion (3.4-4.3 times).
- Per capita GDP will increase from VND 3.2 million to VND 8.0 million - 10.4 million (2.5 - 3.2 times).
- The percentage of urban population will increase from 23.3% to 32.5%.
- Industrialization will make further progress and industrial outputs, such as steel, cement, fertilizer, and manufacturing goods, will increase significantly (about five times).
- Foreign trade will increase substantially (2.3 to 2.9 times).

These overall changes will affect the entire country. It is expected that regional development objectives, with special attention to narrowing regional disparity and

alleviating poverty in rural areas, will be properly attended to in the process. In this context, the VITRANSS briefly describes the future traffic scenario, thus:

- Social and economic expansion will considerably intensify traffic demand throughout the country and probably spawn various traffic services. Under constant urbanization trends, traffic demand will further increase. Seasonal traffic fluctuations will become less significant as the society becomes less agriculture-based. Passengers will require faster and more comfortable transport services in line with increasing incomes.

- The government's decentralization policy aims at equitable growth and balanced urbanization among the regions. While it is expected that the number of large cities with more than 500,000 people will increase from four to 10 by 2020, it is an important strategy that subordinate urban centers are developed in a hierarchical and integral manner to support rural development. The development of strategic growth belts, including Ha Long-Hai Phong-Hanoi-Vin, Hue-Danang, and Vung Tau-Bien Hoa-HCMC-Can Tho, will be accelerated. However, the benefits from these developments must be felt by the rest of the country, particularly through an integrated transport network and services across the country.

- In spite of the expected growth, poverty will remain. In 1990 urban incomes on average were five times higher than rural incomes, rising to eight times in 1997. In order not to widen such urban-rural disparity, rural transport should be strengthened to ensure market access, enhance agricultural productivity and encourage off-farming activities.[18]

- Industrial powerhouses will be scattered all over the country, reflecting Vietnam's extensive reservoir of rich mineral resources and some political decisions on the choice of their locations. For example, coal and refined oil products will be transported mostly from the Quang Ninh coalfields and the Dung Quat oil refinery plant, respectively, to consumption places nationwide. Cement and fertilizer products will mainly be produced in the north due to the area's rich mineral resources, while large urban economies will supply diverse manufacturing goods. To connect production and consumption areas, long-distance haulage will inevitably be needed. If these transport services cannot be provided sufficiently at economical prices, imported goods may easily substitute for local ones.

[18] According to the World Bank's analysis, in Vietnam about 90% of the poor live in rural areas and only 30% of them depend solely on farming for their livelihood. It also indicates that those who have access to all-weather roads have relatively higher living standards than those who have none.

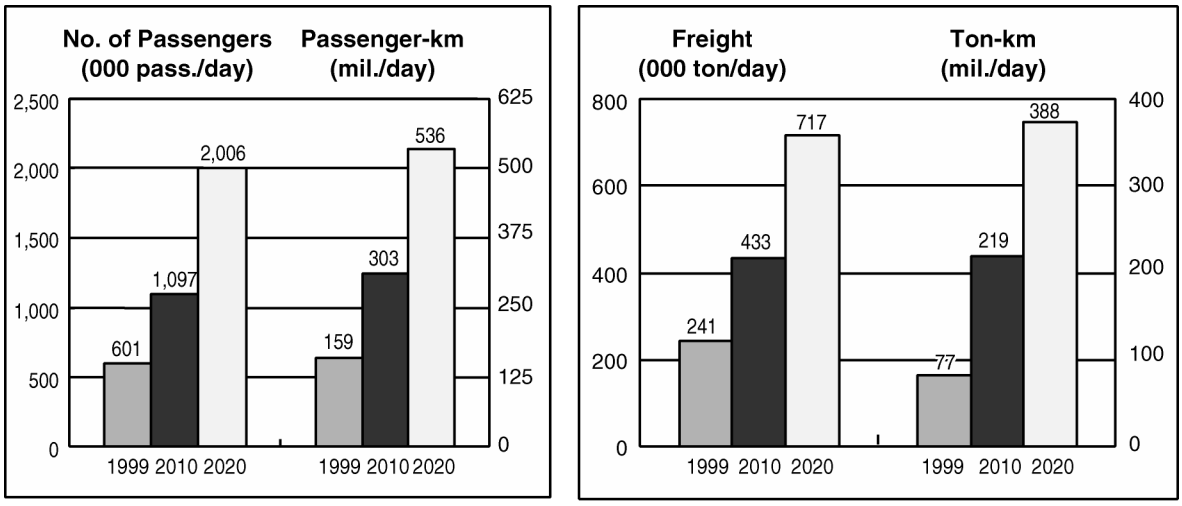
Table 4.1
Growth of Population and GDP

Population	Million (Index)	1999	2010	2020
		76.3 (100)	94.5 (123)	109.5 (143)
GDP (VND trillion at 1994 price)	High Case (Index)	264 (100)	598 (227)	1144 (433)
	Low Case (Index)		531 (201)	885 (335)

Transport Demand – Present and Future

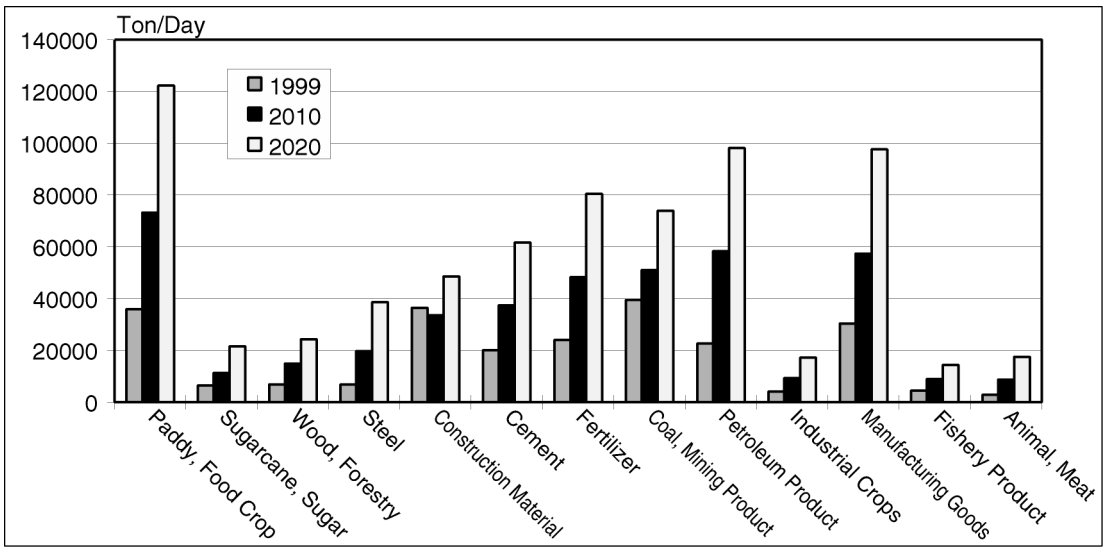
Overall Demand Growth: In 1999 interprovincial passenger transport demand was about 219 million passengers (0.6 million a day) or 58.4 billion passenger-km (160 million a day) and is projected to grow by 1.8 times and 3.3 times in 2010 and 2020, respectively. The total volume of interprovincial cargo estimated at 89 million tons in 1999 will grow by 1.9 times and 3.1 times in 2010 and 2020, respectively. Since average transport distance will increase, cargo transport demand will become nearly five times more in 2010 in terms of ton-km. Major cargo items currently transported are rice/paddy, construction materials, coal, petroleum, and manufactured goods. Demand will increase especially for rice/paddy, steel, cement, fertilizer, petroleum, and manufactured goods.

Figure 4.1
Growth of Future Transport Demand



Source: VITRANSS

Figure 4.2
Growth of Cargo Transport Demand by Type



Source: VITRANSS

International Transport Demand: International movement of goods and passengers will also increase. International passenger transport demand of 24 million in 1999 will increase to more than 50 million in 2020, wherein the share of air will increase from 10% to 23% to 29% during the period. Foreign trade, which is composed of export, import and transit/transshipment, will also increase two or three times.

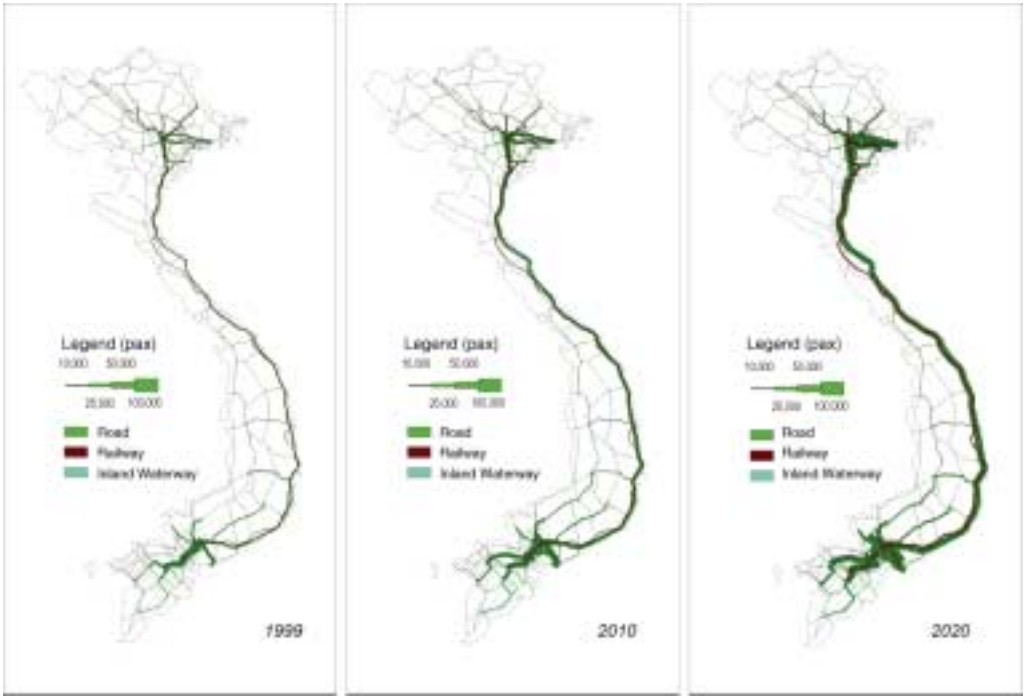
Table 4.2
Summary of International Traffic

	1999	2010	2020
1. Passengers			
– Total number (million)	24	34-36	51-56
– Modal share (%) by land	90	77-80	71-77
by air	10	20-23	23-29
2. Foreign Trade			
– Total tonnage (million)	41	55-59	96-119
Export	21	31	46-50
Import	17	19-22	42-60
Transit/Transshipment	3	5-6	8-9
– Modal share (%) by land	18	20	23
by sea	82	80	77

Source: VITRANSS

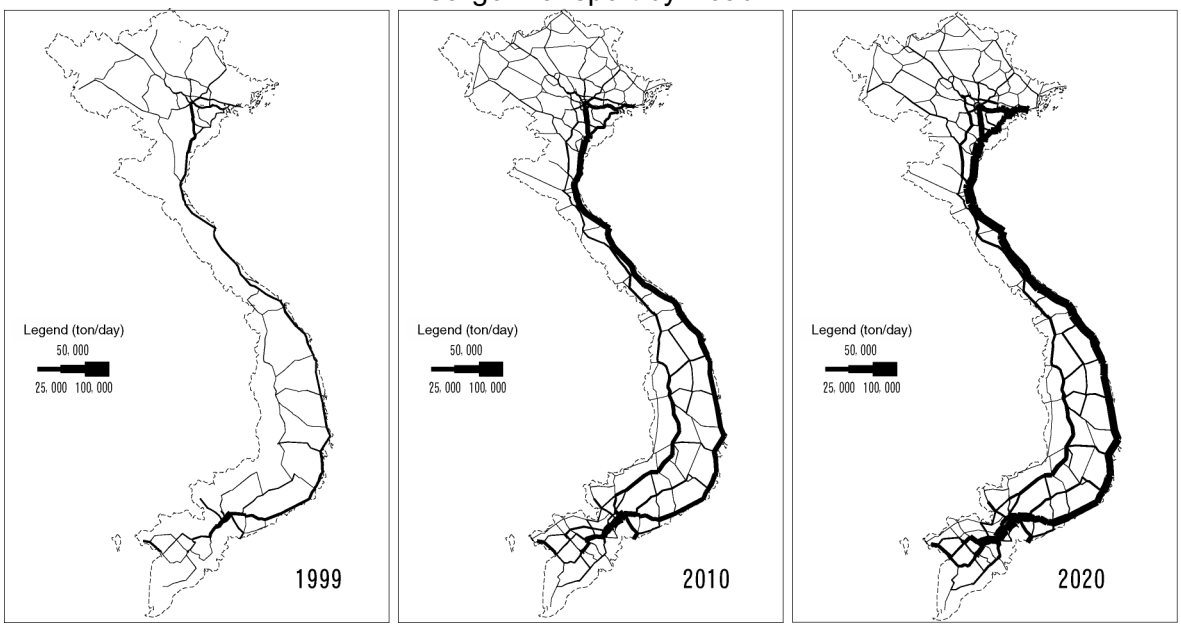
Transport Demand on the Network: At present, traffic movement is significant in radial directions centered on HCMC and Hanoi within the delta areas. However, the north-south movement between HCMC and Hanoi, which is not substantial at present, will become more significant in the future. In the case of cargo transport, the inland trunk road or HCM highway, will also contribute to this north-south movement. As it is expected that the transport distance of cargo will increase in the future, the share of coastal shipping, mainly for bulk cargo, will increase significantly. Railway will likewise become more important in cargo transport. As road development progresses, inland waterway transport will, increasingly, cater mainly for intraprovincial transport needs.

Figure 4.3
Passenger Flow by Surface Mode



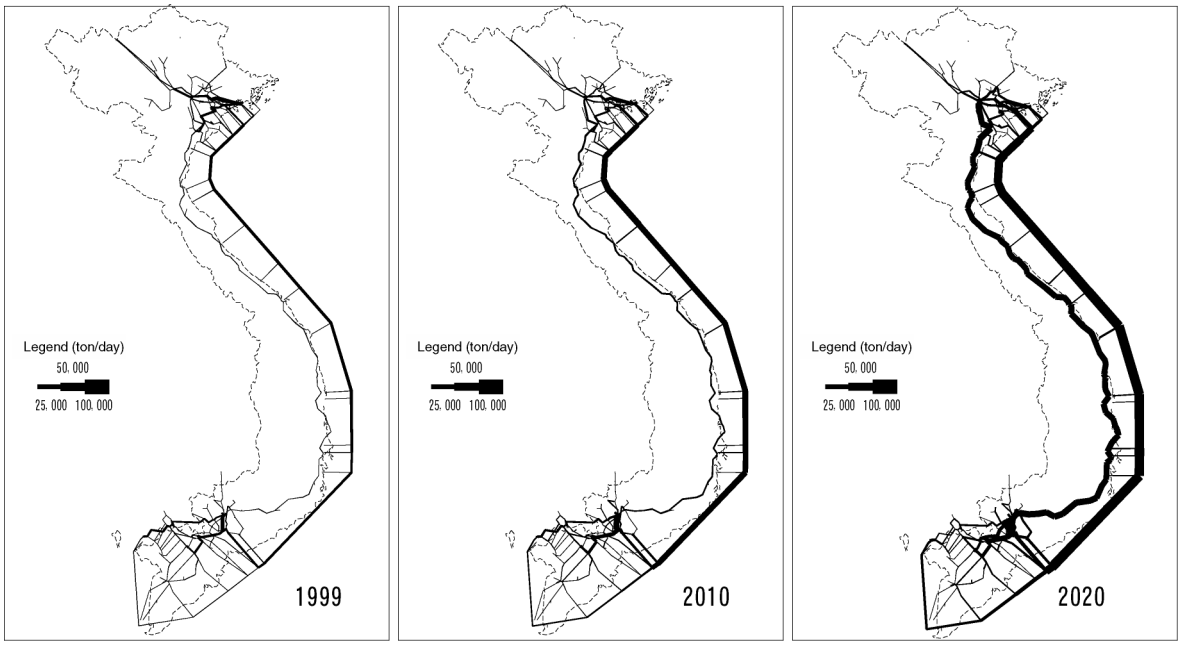
Source: VITRANSS

Figure 4.4
Cargo Transport by Road



Source: VITRANSS

Figure 4.5
Cargo Transport by Rail, Inland Waterway and Coastal Shipping



Source: VITRANSS

Available Funding Resources for the Transport Sector

Investment in the transport sector has been about one-fourth of public investment in recent years or about 1.8% of GDP. Although it has been advocated that transport sector investment should be 3% of GDP [19], this is quite unrealistic, since most investments in transport infrastructure have been funded so far by official development assistance (ODA). It is unlikely that ODA will grow further, partly due to the economic situation of donor countries themselves and partly because self-financing is expected to grow in Vietnam.

Based on the GDP projected by the VITRANSS, the possible investment amount was estimated for the following cases:

Case 1: 1.8% of GDP is continuously invested in the transport sector
Case 2: 2.5% of GDP is continuously invested in the transport sector
Case 3: 3.0% of GDP is continuously invested in the transport sector

The estimated amount likely to be available for the transport sector from the government ranges between US$ 23 billion and US$ 45 billion for the next two decades (see Table 4.3). For the VITRANSS, Case 2 is assumed to be the most likely case which indicates that about US$ 12 billion will be available for the Master Plan period.

Table 4.3
Estimate of Possible Investment in the Transport Sector

US$ billion

Period	Case 1[1/]: 1.8% of GDP		Case 2[1/]: 2.5% of GDP		Case 3[1/]: 3.0% of GDP	
	High	Low	High	Low	High	Low
2001-2005	3.7	3.5	5.1	4.9	6.2	5.9
2006-2010	5.4	4.9	7.5	6.8	8.9	8.1
Subtotal 2001-2010	9.1	8.4	12.6	11.7	15.1	14.0
2011-2020	18.0	14.7	25.0	20.5	30.0	24.5
Total	27.1	23.1	37.6	32.2	45.1	38.5

Source: Estimated by the VITRANSS
1/ "High" and "low" refer to high and low GDP growth rates assumed in the Study.

[19] The scale of public funding in terms of GDP spent on the transport sector in 1996 is as follows: Brunei Darussalam (2.9%), Malaysia (2.4%), Myanmar (2.3%), Philippines (2.0%), and Thailand (7.3%) (ASEAN Secretariat).

Environmental Considerations

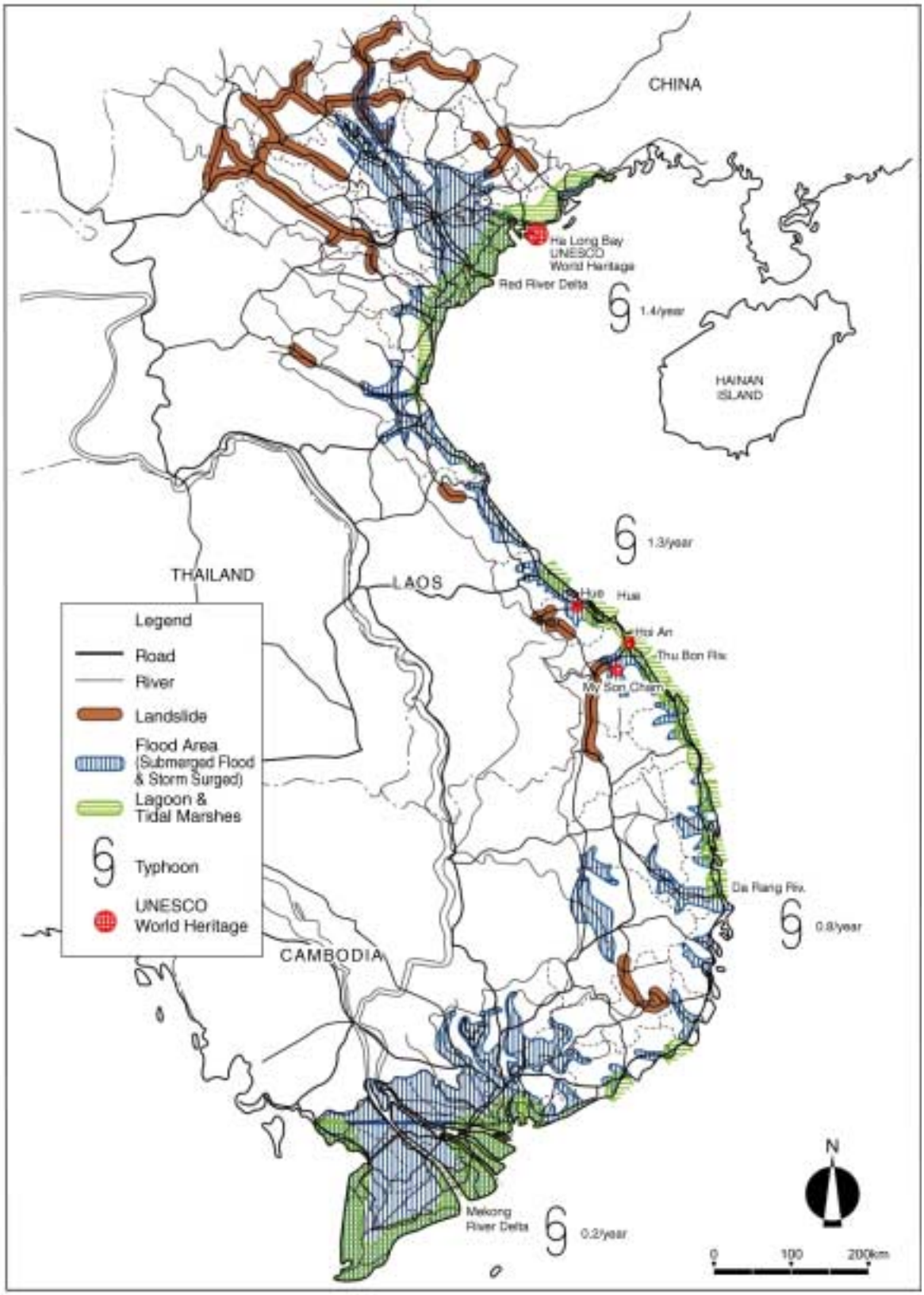
Environmental issues are becoming more and more critical in economic and social development. In the VITRANSS, these issues are assessed by subsector from the viewpoint of natural and social environments.

Environmentally critical areas in Vietnam are briefly as follows:

- Landslide-prone areas are widely distributed in hilly and mountainous regions of Vietnam. Particularly in the northern mountainous provinces, careful assessment is needed before implementation of projects because of the presence of many faults that may be activated when earthquakes occur.
- Flood-prone areas are the Red River delta, Mekong delta and some coastal areas. The latter are also sometimes seriously affected by storm surges. Transport infrastructure in these areas must not be prone to damage by water. At the same time, it must not hinder water flow. Particularly in the deltas, road projects need to be integrated with flood protection projects.
- Along the coastline of Vietnam, lagoons and tidal marshes are widely distributed. These areas, which often include mangroves, are ecologically precious. Transport projects, particularly ports, should not adversely impact on these areas. Hence, a proper assessment must be conducted prior to implementation.
- Areas of natural and historical importance, such as those identified as World Heritage sites (Ha Long Bay, Hue, My Son, and Hoi An), and the ancestral domain of cultural communities should likewise be protected and conserved.

Other aspects considered are the impacts on the social, natural and living environments. The social environment involves issues concerning resettlement of inhabitants, economic activities, impacts of traffic and public facilities, community disruption and severance, historical and cultural property, water rights and commons, public health, wastes and hazards. The natural environment involves issues concerned with topography and geology, soil erosion, underground water, hydrological situation, coastal zone, flora and fauna, meteorology and landscape. Living environment includes aspects such as air pollution, water quality, soil contamination, noise and vibration, and land subsidence.

Figure 4.6
Environmentally Critical Areas in Vietnam



5 LONG-TERM TRANSPORT STRATEGIES

Transport Sector Goals

The goal of transport sector development is to contribute to the realization of the national development goals of economic growth, poverty reduction, safety enhancement, environmental protection, and human resource development. Transport sector policy should cover the following aspects: economic (contributing to increases in GDP and consumer satisfaction), developmental (supporting balanced developments), social (providing services to the poor), and environmental (protecting and conserving the environment). All these aspects must be considered in formulating a transport strategy. In addition to meeting the above-mentioned national objectives, the transport sector of Vietnam aims at strengthening regional integration within ASEAN and with China.[20]

When addressing long-term strategies, the starting point is to define Vietnam's future policy environment in which the transport sector will function. In accordance with overall development policies, the focus will shift from direct public sector management and funding to private sector skills and resources, supported by public sector facilitation and procurement. The forms of intervention will change from investment in projects to capacity building/institutional restructuring. Development will involve policy reforms to create competitive markets and focus public investment in strategic projects. Many policy-makers are all too aware of this and are trying to remedy the situation. But it is recognized that the current implementation of needed reforms is not satisfactory. Ideally, the policy goals and objectives of the transport sector should transform the sector into one that should:

- be economical, wherein needs of transport users and consumers are satisfied at least cost,
- be supportive of a balanced development across the country,
- ensure adequate accessibility to support socio-economic activities of the poor, especially in rural areas,
- not adversely affect natural and socio-cultural environments, by providing appropriate countermeasures when and where necessary to protect and enhance these environments,
- facilitate regional integration envisioned and currently being promoted internationally, especially within ASEAN and GMS.

Of the wide range of sector development objectives, the most critical aspect is to meet the economic and social needs of society. The key objectives of transport sector development are thus summarized in the phrase,

"Competitive Transport with Social Equity".

[20] Vietnam has entered into a number of bilateral and multilateral agreements with these countries to facilitate the transport of goods and people across borders.

Transport Sector Objectives and Strategies

The transport sector objectives and strategies need to be developed in a way that is consistent with overall macro-economic policies and constraints.

The major issues, policies and strategies that need to be addressed for the transport sector in Vietnam can be categorized into four aspects, namely: (1) operation and management, (2) infrastructure, (3) institutional/competitive framework, and (4) funding. The strategies required to meet the policy goals and objectives described above are summarized as follows:

Table 5.1
Transport Sector Objectives and Strategies

Operations/Management	**Objectives**	• To meet the needs of transport users at minimum cost • To provide accessible, safe and affordable transport services, especially for the poor • To reduce transport accidents and adverse environmental impacts • To modernize transport technology and operating techniques
	Strategies	• Equitize operator SOEs and increase efficiency of remaining SOEs to foster competition • Facilitate entry by new (private sector) operators and use of modern technology/operating techniques • Provide training in business skills for transport sector industries
Infrastructure	**Objectives**	• To establish a competitive and efficient national primary/ secondary transport network with links to rural areas and international gateways • To establish an effective tertiary/rural road network to provide access to the main network
	Strategies	• Complete rehabilitation programs of the main transport network and tackle maintenance backlog • Upgrade the main network in a hierarchical and integrated manner • Improve rural transport infrastructure where economically/socially beneficial • Construct new expressways and strategic links/nodes where justifiable
Institutional/Competitive Framework	**Objectives**	• To establish a regulatory framework to give a level playing field, with adequate safety and environmental safeguards • To establish the sector's administrative capacity at national/local levels, especially for infrastructure management • To promote private sector capacity building and participation
	Strategies	• Implement legal framework with clear, justifiable, enforceable rules • Develop and implement economic pricing and cost recovery policies • Develop justifiable safety and environmental programs, and means for their enforcement • Remove unnecessary barriers to competition • Strengthen infrastructure management systems to promote decentralization, to divest commercial functions and to strengthen human resource development • Define human resource development policies and strategies for the transport sector (based on increasing training incentives and opportunities) and implement them • Provide training in key management and technical fields • Improve construction services by raising standards and improving competition
Funding	**Objectives**	• To establish a sustainable funding mechanism for infrastructure (especially for maintenance) that is supported by transport users
	Strategies	• Develop sustainable funding for infrastructure maintenance (improved budgeting systems and dedicated funds) • Provide domestic credit sources for the private sector • Sustain/expand ODA funding • Develop own fund sources

Subsector Strategies

For each subsector, more specific long-term objectives and strategies are defined based on the overall transport sector objectives and strategies for each of the four aspects: operation/management, infrastructure, institutional/competitive framework and funding.

Table 5.2
Road Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To promote competitive and affordable transport services • To provide minimum accessibility levels for the poor • To reduce the number and cost of road accidents
	Strategies	• Equitize bus and truck SOEs to foster competition • Promote higher professional standards and training of bus and truck operators through voluntary accreditation schemes • Develop and implement road safety programs
Infrastructure	**Objectives**	• To establish a reliable national backbone network of main roads • To improve/develop the rural road network • To establish an effective provincial road network connecting national and rural road networks
	Strategies	• Complete rehabilitation of main/secondary network • Complete the primary/secondary network • Accelerate tertiary/local road development • Prepare appropriate design standards and construction methods
Institutional/Competitive Framework	**Objectives**	• To strengthen road administration capacity at national/local levels • To establish a competitive environment to promote efficient and high quality services • To set and enforce justifiable minimum safety and environmental standards
	Strategies	• Implement legal framework with clear, enforceable minimum standards without other regulatory obstacles • Strengthen national/local road planning and maintenance systems • Provide training in road maintenance management systems, contracting and other business skills • Set higher standards and improve competition in the construction industry
Funding	**Objectives**	• To establish a sustainable funding mechanism for road maintenance and development that is supported by road users
	Strategies	• Sustainable funding for road maintenance (better budgeting and road fund) • Sustain ODA funding • Expand and facilitate access to credit sources by the private sector • Develop own fund sources

Table 5.3
Railway Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To increase efficiency and service level for core traffic (bulk) • To develop new markets (such as container services)
	Strategies	• Rehabilitation and replacement of rolling stock to sustain the carrying capacity for core traffic • Acquire improved rolling stock where required for new services • Improve railway operation, facilities and equipment as well as human resources
Infrastructure	**Objectives**	• To sustain the main lines as part of the backbone of the overall transport network • To extend the network to integrate with main ports/traffic generators, where justified • To clear bottlenecks in urban areas
	Strategies	• Continue to rehabilitate critical infrastructure to sustain operations • Rehabilitate/improve the main network in accordance with economic priority • Rehabilitate secondary lines where justified • Improve critical sections in Hanoi and HCMC • Develop main freight stations and other infrastructure
Institutional/Competitive Framework	**Objectives**	• To commercialize the railway and make it more market-oriented • To increase competition within the railway and the transport sector
	Strategies	• Establish railway as a business corporation, divesting itself of peripheral units • Prepare realistic business plans for passenger and freight businesses • Implement management systems (especially information systems, costing and bases for payment of infrastructure and workshop services) • Provide training in modern railway management methods • Establish railway inspectorate in the MOT to oversee railway safety and implement the railway act/regulations
Funding	**Objectives**	• To establish incentives for increased management performance and self-finance except for specific subsidies
	Strategies	• Establish a performance agreement between railway and government giving clear rights and obligations with a predictable financing mechanism • Agree to long-term plans for performance and investment • Encourage increased ODA funding

Table 5.4
Inland Waterway Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To promote competitive and affordable transport and port services • To improve productivity in transport and port operations • Reduce number and cost of accidents
	Strategies	• Equitize inland waterway transport SOEs to foster competition and investment in larger, modern vessels • Commercialize port management • Implement modern services including container service • Develop and implement safety programs
Infrastructure	**Objectives**	• To establish a clearly defined international/interprovincial waterway network • To establish a sustainable secondary and local waterway networks integrated with the main transport network
	Strategies	• Complete rehabilitation of main rivers • Rehabilitate the rural network
Institutional/Competitive Framework	**Objectives**	• To establish inland waterway transportation administration capacity at national/local level • To encourage a more active participation of the private sector • Ensure safe navigation particularly along major routes
	Strategies	• Implement legal framework (including enactment of IWT act), improve vessel inspection and remove regulatory obstacles • Strengthen national/local waterway planning/maintenance system with clear separation of responsibilities for inland water and maritime transport • Provide training in maintenance management, contracting and other business skills • Complete equitization of construction/maintenance SOEs and improve contracting procedures • Establish a mechanism for dialogue with the private sector such as a Lighters Association
Funding	**Objectives**	• To establish a sustainable funding mechanism for waterway maintenance and development, supported by waterway users as appropriate
	Strategies	• To develop sustainable maintenance fund with cost-effective revenue collection • Encourage private funding of container port facilities • Sustain ODA funding • Develop own fund sources

Table 5.5
Maritime Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To promote a competitive, efficient Vietnamese shipping industry • To improve efficiency and services of ports and support services • To reduce number/cost of accidents and risk of oil spills and other adverse environmental impacts
	Strategies	• Commercialize and, eventually, equitize coastal shipping SOEs to foster competition • Corporatize ports as independent entities, with increased local representation on management boards, to increase competition within and between ports • Improve general/specialized cargo handling • Expand and improve port facilities and international/domestic container liner shipping for container transport • Promote multimodal and specialized transport (bulk) • Commercialize and equitize shipbuilding and repair yards • Provide training in business skills and modern methods of cargo handling • Develop and implement safety and environmental programs
Infrastructure	**Objectives**	• To develop the port system in a hierarchical manner to provide adequate capacity • To develop competitive gateway ports to strengthen port linkages with the global market
	Strategies	• Increase capacity utilization of existing ports through rehabilitation, upgrading and more efficient handling methods / equipment / management • Develop new port capacity in accordance with demand including 3 gateway ports in the north, central and south and 8 major general ports
Institutional/Competitive Framework	**Objectives**	• To strengthen administrative capacity to plan, to manage infrastructure and to set and enforce safety and environmental standards • To introduce a market-based port regulatory system that encourages efficiency and private sector participation
	Strategies	• Strengthen VINAMARINE's capacity to monitor the subsector (capacity utilization, competition and infrastructure plans based on user needs and overall development costs) • Strengthen VINAMARINE's capacity to monitor infrastructure condition and plan infrastructure maintenance, based on clear separation between inland water and maritime responsibilities • Strengthen the roles of the Vietnam Ports Association and Vietnam Shipowners Association • Divest VINAMARINE of the remaining ports and other commercial functions • More port autonomy (port charges) subject to strict financial and performance targets • Continue to incorporate international agreements into maritime law • Improve port state control inspection standards • Provide training in infrastructure management methods and regulatory techniques.
Funding	**Objectives**	• To broaden the options for port funding by tapping private and other sources • To develop a seaworthy and competitive Vietnamese fleet
	Strategies	• Encourage private funding of container port facilities and operations • Provide financial support to facilitate fleet modernization and expansion • Sustain ODA funding and develop own fund sources

Table 5.6
Aviation Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To strengthen Vietnamese airlines and make them competitive under a more liberalized environment • To improve efficiency of airports and support services
	Strategies	• Promote increased independence of VAC member airlines • Commercialize and corporatize airports to encourage delivery of better services • Promote increased competition in the supply of support services • Provide training in business skills
Infrastructure	**Objectives**	• To develop the airport system in a hierarchical manner to provide adequate capacity • To develop the air traffic control system using modern technology that meets international requirements
	Strategies	• Increase the capacity of and rehabilitate main airports • Encourage coordination of military and civil airport planning • Develop air traffic control system in priority areas • Install new CNS/ATM equipment • Develop capacity of secondary airports, where economically justifiable
Institutional/Competitive Framework	**Objectives**	• To strengthen administrative capacity to plan, manage the infrastructure and regulate the subsector • To enhance air traffic safety and environmental standards • To establish a more liberalized fare system to balance supply and demand effectively
	Strategies	• Strengthen CAAV capacity to plan and evaluate infrastructure development based on user needs • Divest commercial functions of CAAV, giving more autonomy to airports in setting airport charges but stricter performance targets • Review international technical and regulatory standards and incorporate these into Vietnamese practice • Remove fare control and give greater freedom to airlines to develop market-based fares • Provide training in planning and use of modern technology
Funding	**Objectives**	• To broaden the options for airport funding by tapping private and other sources • To promote Vietnamese/foreign partnerships to increase finance and transfer of know-how
	Strategies	• Ensure full cost recovery (including full financing costs) from user charges and remove discounts to Vietnamese airlines • Allow foreign funding of airline businesses • Encourage private funding of airport terminals/facilities • Develop own fund sources

Table 5.7
Multimodal Transport Subsector Objectives and Strategies

Operations/Management	**Objectives**	• To provide shippers with high-quality, door-to-door transport services required for future distribution systems
	Strategies	• Develop freight forwarders, warehousing agents and other intermediaries /consolidators • Foster a shippers' council and operator associations • Introduce guaranteed scheduled services for small consignments using larger specialized vehicles/vessels • Introduce cargo information management systems • Provide training in business skills and logistics methods
Infrastructure	**Objectives**	• To remove bottlenecks in distribution systems which prevent reliable and timely services at low costs
	Strategies	• Introduce modern cargo-handling methods at ports, terminals and warehouses for smooth intermodal transfers • Improve access links to ports and productions sites (especially container movement) • Develop new specialized port facilities
Institutional/Competitive Framework	**Objectives**	• To establish the legal framework for multimodal operations and management • To complete the legal framework for each mode • To remove legal obstacles affecting transport services
	Strategies	• Establish the legal framework for freight carriage (limits of liability, legal basis for multimodal transport operators or MTOs, and freight forwarders to act as principal carriers rather than mere agents) based on international standards • Reform customs regulations to allow modern clearance systems using clearing agents in ports and at authorized inland depots • Accede to major international agreements on trade and transport and incorporate these into Vietnamese law • Provide training in multimodal operations and regulations • Remove restrictions on foreign investment in transport
Funding	**Objectives**	• To broaden the options for port funding by tapping private and other sources
	Strategies	• Encourage private funding of container ports and inland depots by providing support infrastructure such as land and good access links

Evaluation of Modal Balance

While the transport sector in Vietnam consists of the full range of transport modes, a critical planning issue is finding the appropriate balance among these modes. This is not an easy task because the ability and performance of transport modes are affected by a number of parameters including infrastructure, equipment, operation, etc. Nevertheless, an exercise was conducted to test relative changes in overall transport costs by analyzing various scenarios for the future modal composition of the national transport network. In the analysis the total transport cost was calculated as the sum of the operating cost of transport equipment, time cost of passenger and cargo, loading/unloading and transshipment of cargo, and construction and maintenance cost of transport infrastructure.

The results of the analysis, though based on assumptions, indicate that if the current trend in modal split continues, the overall transport network would not be economical. From the economic viewpoint, the availability of competitive services in coastal shipping, railway and inland waterway is critical. This does not mean unlimited expansion of such modes but, rather, suggests the need for an adequate balance of the three modes. The recommended strategy is to facilitate the shift from road. The role of inland waterway in interprovincial transport will be less significant in the future though remaining important for intraprovincial transport (see Table 5.8).

Table 5.8
Estimated Overall Transport Costs and Modal Shares (Freight) by Case

Case	Year	Annualized Overall Transport Cost[1/]		Modal Share in Cargo Transport by Ton-Km (%)				
		(US$ billion)	Index (Economic) = 100	Road	Inland Water-way	Rail	Coastal Shipping	Air
1. Present[2/]	1999	5.0	-	43	18	6	33	0
2. Do-nothing[3/]	2020	27.3	229	43	7	13	36	1
3. Most Economical[4/]	2020	9.7	82	13	11	12	64	0
4. Economic[5/]	2020	11.9	100	24	9	19	48	0
5. Base[6/]	2020	16.8	141	71	6	6	17	0
6. Target[7/]	2020	14.5	122	48	7	12	33	0
7. Road Only[8/]	2020	18.5	155	57	3	7	32	1
8. Inland Water Only[9/]	2020	21.5	181	34	11	11	42	2
9. Rail Only[10/]	2020	21.7	182	30	6	36	27	1
10. Coastal Shipping Only[11/]	2020	21.1	177	34	7	9	49	1

Source: VITRANSS
1/ Construction cost is estimated yearly over 30 years at 12% p.a.
2/ **Present**: Actual 1999 traffic demand on the existing network.
3/ **Do-nothing**: 2020 demand on the existing (1999) network.
4/ **Most Economical**: 2020 demand, 100% on the most economical mode (route).
5/ **Economic**: 2020 demand, assigned in inverse proportion of cost to available modes (routes).
6/ **Base**: 2020 demand, assigned according to present shares by OD pair.
7/ **Target**: 2020 demand, mixture of ½ Economic Case and ½ Base Case.
8/ **Road Only**: 2020 demand, the same as the Economic Case limiting new investments to roads only
9/ **Inland Waterway Only**: 2020 demand, limiting new investments to inland waterway only.
10/ **Rail Only**: 2020 demand, limiting new investments to rail only.
11/ **Coastal Shipping Only**: 2020 demand, limiting new investments to coastal shipping only.

Overall Network Development

Planning Considerations: A long-term transport network plan provides a useful basis to guide infrastructure investments in a coordinated and integrated manner. In formulating the overall network structure and the estimated future demand, the following factors were duly considered:

- All growth centers, production areas, communities, and other activity centers should be provided with adequate transport infrastructure and services.
- To maximize infrastructure capacity, the transport network should be planned with a clear hierarchy, making use of the existing network and facilities to meet future demand effectively and economically.
- Intermodal connection should be assured through infrastructure and institutional arrangements to facilitate the smooth transport of goods and people.
- International linkages with global markets and adjoining countries should be strengthened.
- Growth belts in the north, south and central part of Vietnam should be provided with strategic transport infrastructure.
- Other factors, such as environmental and geographical characteristics, should be properly incorporated into the plan.

Hierarchy of Transport Network

The expected roles of transport modes at different levels of the hierarchy are briefly explained as follows:

- **International Gateways**: Airports and ports will function as major international gateways for passenger and goods movement, whereas railways, roads and inland waterways will provide international transport linkages with neighboring countries to a lesser extent. Three ports and three airports in the north, center and south will function as international gateways. Minor cross-border corridors will also supplement international transport.

- International linkages with global markets and adjoining countries should be strengthened.
- Growth belts in the north, south and central part of Vietnam should be provided with strategic transport infrastructure.
- Other factors, such as environmental and geographical characteristics, should be properly incorporated into the plan.

- **North-South Backbone**: How to establish/strengthen the north-south transport corridor is the next key concern in planning. The four modes of air, maritime, rail, and road will share the responsibility of strengthening this transport backbone.

- **Links with Strategic Transport Nodes/Traffic-generating Sources**: Road, rail and inland water links should be integrated with international airports, ports, goods distribution centers, railway terminals, etc.

- **Interface between Inter-city and Intra-urban Network**: Expanding and growing metropolitan areas, particularly in HCMC and Hanoi, require effective and integrated inter-urban and intra-urban networks, especially rail and road.

- **Secondary Network**: The above primary network should be further supplemented and strengthened with strategically configured secondary network. A general guideline at this level of transport network is to link at least the provincial capitals and other strategic provincial centers with primary/secondary roads.

- **Tertiary Network**: Although this level is not fully considered in the VITRANSS, the needed function and planning guidelines will be studied based on a case study of selected provinces.

Table 5.9
Expected Roles of Transport Modes in Vietnam

Hierarchy	Air	Maritime	Rail	Road	Inland water
International	✓✓✓	✓✓✓	✓	✓	✓
Interprovincial	✓✓	✓✓	✓✓✓	✓✓✓	✓
Provincial	-	✓	✓	✓✓✓	✓✓
Local	-	-	-	✓✓✓	✓

Note: ✓indicates degree of importance

Conceptual Long-term Transport Network Plan

On the basis of the foregoing discussion, a conceptual long-term transport network plan has been formulated (see Figure 5.1). The network for transport modes is basically classified into three levels: primary, secondary and tertiary. The primary level is of national importance, whereas the secondary level integrates provincial growth centers with the primary level. The tertiary level on the other hand provides adequate accessibility to/from the remaining areas. The need for network integration is among primaries of different modes, and among primary, secondary and tertiary networks. The integrated network is composed of the following:

< Port and Shipping >

Primary	:	Three port systems in the north (Quang Ninh-Hai Phong), the central (Danang Bay) and the south (Saigon-Thi Vai-Vung Tau) to function as international gateways
Secondary	:	Other ports under the MOT, including Cua Lo, Qui Nhon, Nha Trang, Can Tho, My Thoi, and My Tho, to serve the regional movement of goods and passengers
Tertiary	:	Other local ports to serve local needs

< Aviation >

Primary	:	Three international gateways in the north (Noi Bai), the central (Danang) and the south (Tan Son Nhat) to link with major foreign destinations
Secondary	:	Domestic/international airports with regional importance such as Hai Phong, Hue, Can Tho, Lao Cai
Tertiary	:	Other local airports to serve various socio-economic and administrative needs

< Railway >

Primary	:	North-south axis (Hanoi-HCMC), major international links and the lines serving primary ports
Secondary	:	Lines to integrate major cities and secondary ports/airports
Tertiary	:	Other local lines

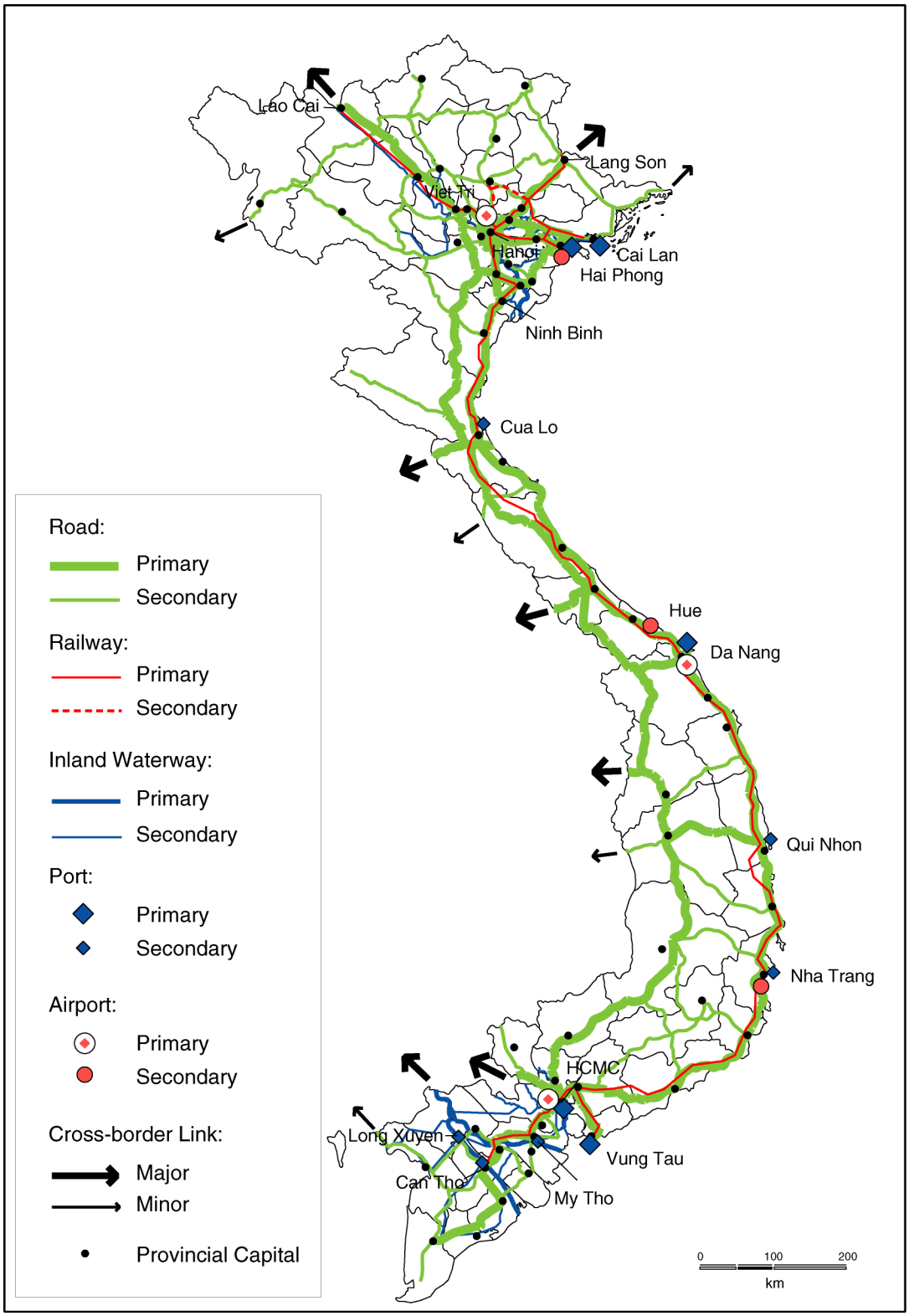
< Inland Waterway >

Primary	:	Waterways along the international rivers and directly related river ports
Secondary	:	Waterways of regional importance and directly related river ports
Tertiary	:	Other local waterways and related river ports

< Road >

Primary	:	North-south national backbone, access to primary ports/airports, strategic centers and major cross-border roads
Secondary	:	Roads linking primary roads with provincial capitals, major ports/airports, activity centers, other transport terminals, other cross-border roads, etc.
Tertiary	:	Roads which link district centers and other equivalent growth centers with primary and secondary networks
Local	:	Other local roads which link communes

Figure 5.1
Long-term Transport Network



Corridor Development Strategies

Definition of Corridors: The overall future transport network for the country was preliminarily planned based on future demand, taking into account the network hierarchy and regional/international integration. The primary purpose of this section is to look into the characteristics, constraints and potentials of selected major corridors to define needed projects and policy recommendations that will facilitate the smooth movement of people and goods along the corridors and promote the effective use of infrastructure.

A total of 27 transport corridors have been identified for assessment with due consideration of the following factors:

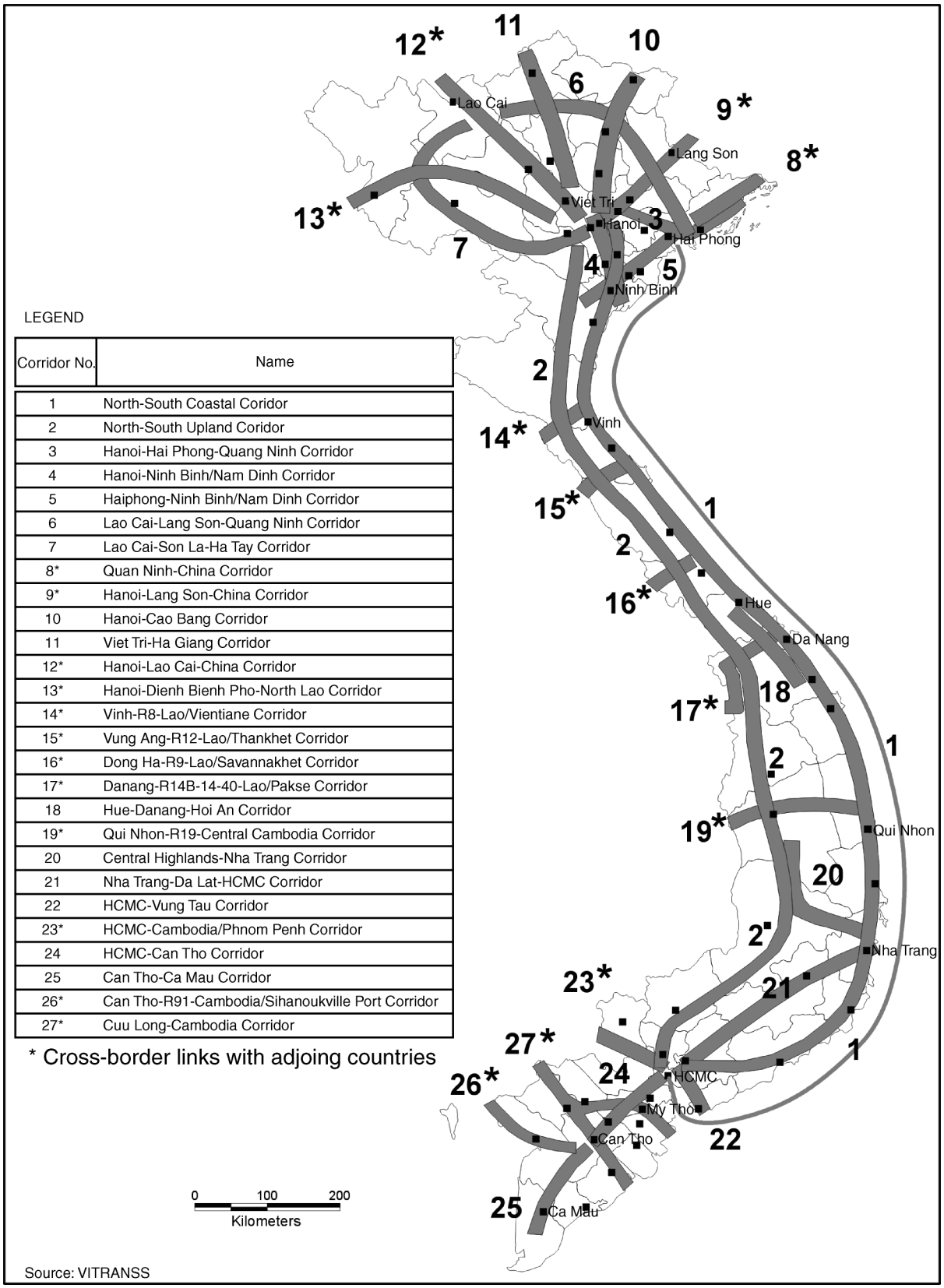
- The corridors are already recognized as primary transport routes.
- The corridors have strategic importance from national and regional development perspectives and supported by existing government policies; and
- The corridors would have greater development potential if their accessibility were improved.

For the identified corridors, existing conditions are described, future demand analyzed, constraints and opportunities assessed and development strategies identified, forming the basis of the projects that will be formulated.

Strategies for Priority Corridors: The selected corridors have been initially assessed based on network analysis using the traffic assignment model. This involved an estimation of the number of road lanes needed to meet additional transport demand of interprovincial passengers and goods. Although the analysis is made on a number of assumptions, the results will give anticipated capacity constraints of and relative importance of the seven corridors, namely: North South Coastal Corridor (Hanoi-HCMC), Hanoi-Hai Phong-Quang Ninh Corridor, Hanoi-Ninh Binh/Nam Dinh Corridor, Hue-Danang-Hoi An Corridor, Nha Trang-Da Lat-HCMC Corridor, HCMC-Vung Tau Corridor, and HCMC-Can Tho Corridor. Moreover, even though all the identified corridors are important, the following deserve priority attention:

1) **North-South Coastal Corridor (Hanoi-HCMC) (Corridor No. 1)**: A long-term goal for this corridor is to develop it into an efficient and competitive corridor with a balanced modal share of various transport modes that will support national economic activities and ensure north-south integration. Intermodal coordination and integration should be carefully designed since four major transport modes, namely, road, rail, shipping and air, operate in this urbanized and densely developed corridor. The roles of each mode should be defined in accordance with their service and target markets to ensure healthy, competitive and complementary operation. This is exemplified in the situation of railway where the demand forecast indicates that there is a potential for expansion as long as it can provide competitive fares and quality services.

Figure 5.2
Identified Major Transport Corridors



LEGEND

Corridor No.	Name
1	North-South Coastal Coridor
2	North-South Upland Coridor
3	Hanoi-Hai Phong-Quang Ninh Corridor
4	Hanoi-Ninh Binh/Nam Dinh Corridor
5	Haiphong-Ninh Binh/Nam Dinh Corridor
6	Lao Cai-Lang Son-Quang Ninh Corridor
7	Lao Cai-Son La-Ha Tay Corridor
8*	Quan Ninh-China Corridor
9*	Hanoi-Lang Son-China Corridor
10	Hanoi-Cao Bang Corridor
11	Viet Tri-Ha Giang Corridor
12*	Hanoi-Lao Cai-China Corridor
13*	Hanoi-Dienh Bienh Pho-North Lao Corridor
14*	Vinh-R8-Lao/Vientiane Corridor
15*	Vung Ang-R12-Lao/Thankhet Corridor
16*	Dong Ha-R9-Lao/Savannakhet Corridor
17*	Danang-R14B-14-40-Lao/Pakse Corridor
18	Hue-Danang-Hoi An Corridor
19*	Qui Nhon-R19-Central Cambodia Corridor
20	Central Highlands-Nha Trang Corridor
21	Nha Trang-Da Lat-HCMC Corridor
22	HCMC-Vung Tau Corridor
23*	HCMC-Cambodia/Phnom Penh Corridor
24	HCMC-Can Tho Corridor
25	Can Tho-Ca Mau Corridor
26*	Can Tho-R91-Cambodia/Sihanoukville Port Corridor
27*	Cuu Long-Cambodia Corridor

* Cross-border links with adjoing countries

Source: VITRANSS

The competitiveness of the transport sector also becomes critical at the international level particularly within the context of globalization as well as regional (ASEAN) and subregional (i.e., Greater Mekong Subregion, GMS) economic integration.

In order to address current issues in line with long-term strategies, short to medium-term strategies have also been laid out as follows:

(1) Enhancement of road safety and orderly road traffic
(2) Rehabilitation of the railway system
(3) Expansion of major general ports (mainly Hai Phong, Tien Sa and Saigon River Ports)
(4) Expansion of primary airports (Noi Bai, Danang and Tan Son Nhat)
(5) Development of urban bypasses at critical city locations
(6) Improvement of railway operation
(7) Expansion of major general ports (mainly Cua Lo, Qui Nhon and Nha Trang)
(8) Expansion of secondary ports (Cat Bi, Phu Bai and Nha Trang)

2) **Hanoi-Hai Phong-Quang Ninh Corridor (Corridor No. 3)**: The corridor should be more efficient and competitive to serve urban/suburban traffic as well as international traffic linked with shipping and air gateways. This corridor will have to deal with different types of traffic, i.e., efficient multimodal transport, economical bulk transport, inter-city passenger traffic, tourist traffic and urban transport. The proposed corridor development strategy is to modernize railway, inland waterways and roads with minimum infrastructure investment to cope with the dense and varied corridor traffic.

A suitable modal composition will be necessary to meet different traffic needs. The railway should serve inter-city passengers and urban transport (to a limited extent) and multimodal transport. Inland waterways, on the other hand, should serve container or bulk transport and, to a certain extent, multimodal transport. Roads should serve urban transport, inter-city passenger traffic, tourist traffic, multimodal transport, and other short and small-consignment freight transport.

Long-term strategies involve the provision of internationally competitive transport services that will further support industrial and urban development along the corridor. Environmental impacts along coastal areas should be seriously considered. Short and medium-term strategies would be as follows:

(1) Completion of ongoing road and bridge projects
(2) Enhancement of orderly traffic flow and road safety
(3) Rehabilitation of the existing two railway lines
(4) Expansion of gateway ports
(5) Expansion of river ports and improvement of inland waterways

(6) Capacity expansion of the Hai Phong Line by double tracking and electrification
(7) Promotion of multimodal transport mainly through road and rail, together with gateway ports expansion and ICD construction

3) **Hanoi-Ninh Binh/Nam Dinh Corridor (Corridor No. 4)**: The corridor should be able to provide efficient and viable urban/suburban transportation services of various modes that will support industrial activities. The long-term strategy is to meet the growing demand for high-quality road and rail services. Short to medium-term strategies are as follows:

(1) Rehabilitation of the railway, particularly between Hanoi and Phu Ly
(2) Expansion of river ports
(3) Improvement of inland waterways along the Day and Red rivers and construction of the DNC (Day-Ninh Co) Canal
(4) Enhancement of traffic management and traffic safety
(5) Widening NH1 from 2-lane to 4-lane
(6) Improvement of intermodal connections

4) **Hue-Danang-Hoi An Corridor (Corridor No. 18)**: The development goal for the corridor is threefold. One is to integrate two separate urban areas and strengthen the foundation for further socio-economic development in the central region. Another is to offer attractive international transport gateways through competitive shipping and air transport services. The third is to facilitate the strengthening of north-south integration.

Long-term strategies should therefore include the removal of capacity constraints at Hai Van Pass, through the provision of both road and rail tunnels, strengthening of gateway ports and airport services, and promotion of an east-west land link with neighboring countries. Short to medium-term strategies include:

(1) Construction of a shorter road tunnel in Hai Van Pass
(2) Expansion of Tien Sa Port with better road access
(3) Expansion of Danang Airport to meet increasing demand
(4) Rehabilitation of the railway
(5) Development of tourist road network in the area
(6) Construction of Lien Chieu Port

5) **Nha Trang-Da Lat-HCMC Corridor (Corridor No. 21)**: This corridor is expected to enable smooth land transport flows between HCMC and the highlands, and at the same time serve as an alternative to NH No. 1. Due to the corridor's rough terrain, it will be difficult to meet future demand only through road development. Moreover, the corridor should be efficiently integrated with the north-south coastal corridor to share the demand between them more effectively. This calls for the expansion of air service via Da Lat and Nha Trang, and development of the shipping service, including containerized

goods transport, via Nha Trang. Short to medium-term strategies include the following:

(1) Rehabilitation and upgrading of existing roads
(2) Rehabilitation and improvement of existing airports
(3) Expansion of Nha Trang Port
(4) Modernization of goods transport

6) **HCMC-Vung Tau Corridor (Corridor No.22)**: The role of this transport corridor is very important. The city plan of HCMC involves expanding the urban area across the Saigon River, in which case this corridor would become more integrated with the total urban system. Developments have been taking place along the Thi Vai River and a new gateway port is also to be located in Vung Tau and/or Thi Vai. The long-term plan to develop a new international airport at Long Thanh is also being considered. Moreover, it is likely that within a couple of decades HCMC will become a mega city, with a population of 10 million including those residing in adjoining localities. Under these circumstances, the efficiency of industrial and urban activities in the area would be directly affected by the quality and efficiency of transport infrastructure and services which are duly addressed in the long-term strategies for the corridor. The provision of modern gateway ports and airports integrated with road, expressway, rail, and inland waterway services through containerization and multimodal transport, and supported with information technology and institutional facilitation measures, is a worthwhile target. Short to medium-term strategies include the following:

(1) Strengthening of linkages between HCMC, particularly Saigon River ports and industrial estates in Dong Nai and Vung Tau
(2) Opening of a new canal between Thi Vai River and Mekong delta, bypassing Saigon River ports
(3) Railway capacity expansion in the HCMC-Bien Hoa section by double tracking and electrification
(4) Commencement of a new deep-sea port construction with an ICD

7) **HCMC-Can Tho Corridor (Corridor No. 24)**: Modal balance is the key to solving future capacity constraints in the corridor. The potential role of inland waterway for goods transport is highly important. Its potential capacity should be tapped as far as possible to ease the load on the corridor.

This highly urbanized corridor generates large volumes of both interprovincial and intra-provincial passenger traffic which cannot be met by inland waterway but only by roads. However, widening and construction of new roads in the corridor may encounter difficulties in acquiring right-of-way. Whereas road expansion and expressway construction are inevitable, the extension of the railway from HCMC to My Tho and farther, to Can Tho, should not be excluded from future options. Short to medium-term strategies are as follows:

(1) Construction of two bridges (My Thuan and Can Tho) to enable smooth road traffic flow
(2) Modernization of inland waterways and river ports
(3) Road capacity expansion (NH50 improvement, expressway construction between HCMC and My Tho)
(4) Promotion of reefer/container transport

Development Strategies of Other Corridors: Strategies for the development of the remaining corridors are briefly as follows:

1) **North-South Upland Corridor (Hanoi-HCMC) (Corridor No. 2)**: Although the traffic demand forecast indicates that immediate capacity expansion is unnecessary, the project is strategically important from the national development viewpoint. In the long run, the corridor will be an alternative for road users, particularly long-distance trucks which may choose this corridor to avoid traffic congestion on the coastal corridor. Network integration with east-west links and with NH1 is an important aspect of the strategy. Short to medium-term strategies include the following:

   (1) Rehabilitation at impassable sections
   (2) Preparation of full-scale rehabilitation and upgrading works for sections with corresponding traffic demand
   (3) Network integration with east-west corridors

2) **Hai Phong-Ninh Binh/Nam Dinh Corridor (Corridor No. 5)**: Development of efficient and economical means of cargo transport is the main target for this corridor, for which strategies are required for upgrading inland waterways and roads, and for enhancement of transport safety.

3) **Lao Cai-Lang Son-Quang Ninh Corridor (Corridor No. 6)**: The objective is to ensure an all-weather road, passable throughout the year, providing farm-to-market access for rural people, and business opportunities for urban industries. Strategies include rehabilitation of existing roads to all-weather condition and upgrading of existing roads to connect mountain provinces with each other and to facilitate cross-border trade with China, where there is sufficient demand to justify the investment.

4) **Lao Cai-Son La-Ha Tay Corridor (Corridor No. 7)**: The objective is to provide an all-weather road passable throughout the year, enabling farm-to-market access for rural people and business opportunities for urban industries. Tourism needs can be carefully incorporated into the development. Strategies include rehabilitation of existing roads to all-weather condition and upgrading of existing roads to connect mountain provinces with each other and to facilitate cross-border trade with China and Lao PDR in accordance with the demand.

5) **Quang Ninh-China Corridor (Corridor No. 8)**: The objective is to develop a road corridor providing Chinese tourists with good access to Ha Long, and supporting cross-border trade. Strategies include improvement and beautification of existing roads and upgrading of existing roads to international standard.
6) **Hanoi-Lang Son-China Border (Corridor No. 9)**: The strategy proposed for the corridor is to use the existing infrastructure and facilities effectively through rehabilitation, minor improvement, implementation of traffic safety measures, and improved operation of railway.

7) **Hanoi-Cao Bang Corridor (Corridor No. 10)**: The objective is to improve the corridor in accordance with demand, with all-weather roads that are passable throughout the year. Integration with rural roads is also an important component of the strategy, to enhance the effects of the investment. Attention must be paid to landslides, soil erosion, precious ecology and the vulnerable communities living in rural areas.

8) **Viet Tri-Ha Giang Corridor (Corridor No. 11)**: This corridor is an important radial corridor in the north, linking hinterland provinces with the capital region. The minimum requirement is providing all-weather road conditions. Further upgrading will be in accordance with the demand. To maximize the investment, network integration with tertiary and rural roads is required.

9) **Hanoi-Lao Cai-China Corridor (Corridor No. 12)**: In view of the high cost of road improvements, the corridor needs a balanced development among the available modes, especially road and rail.

10) **Hanoi-Dien Bien Phu-North Lao PDR Corridor (Corridor No. 13)**: The objective is to ensure an all-weather road passable throughout the year, providing secondary international linkage with Lao PDR and rural access to the mountainous provinces. Strategies include rehabilitation of existing roads to all-weather condition and upgrading of roads to improve rural access and to facilitate cross-border movement with Lao PDR.

11) **Vinh-R8-Lao/Vientiane Corridor (Corridor No. 14)**: Strategies include rehabilitation and upgrading of existing roads to improve rural access and to facilitate cross-border movement, rehabilitation and modernization of the existing port and introduction of transport services of international standard.

12) **Vung Ang-R12-Lao/Tha Khet Corridor (Corridor No. 15)**: The objective is to ensure an all-weather road passable throughout the year, providing secondary international linkage with Lao PDR and rural access to the mountainous provinces. The terrain is highly mountainous at the Lao PDR border. Difficulties include difficulties with construction works and environmental protection, and the need to start developing the proposed new Vung Ang Port. However a road improvement project has already commenced. Strategies include rehabilitation

of existing roads to improve rural access and to facilitate cross-border movement, and upgrading of existing roads depending on regional development.

13) **Dong Ha-R9-Lao/Savanakhet Corridor (Corridor No. 16)**: Strategies include rehabilitation and upgrading of existing roads to promote cross-border trade and to provide rural access to mountainous areas, upgrading of existing ports and introduction of internationally competitive transport services.

14) **Danang-R14B-14-40-Lao/Pakse Corridor (Corridor No. 17)**: Strategies include rehabilitation of existing roads to improve rural access and to facilitate cross-border movement, rehabilitation or upgrading of the existing gateway port at Danang and upgrading of existing roads to introduce competitive transport services.

15) **Qui Nhon-R19-Central Cambodia Corridor (Corridor No. 19)**: Strategies include rehabilitation of existing transport infrastructure to improve rural access and promote cross-border trade, and upgrading of roads in accordance with regional development.

16) **Central Highlands-Nha Trang Corridor (Corridor No. 20)**: The objective is to provide an efficient, all-weather road to serve vast agricultural areas planted with industrial crops, and link them to Nha Trang Port. Strategies include rehabilitation of existing transport infrastructure and upgrading of transport infrastructure.

17) **HCMC-Cambodia/Phnom Penh Corridor (Corridor No. 23)**: The objective is to provide a multimodal, upgraded international transport corridor comprising roads and IWT. Strategies include rehabilitation and upgrading of existing roads and river ways, improvement of institutional arrangement for cross-border movement and internationally competitive transport services.

18) **Can Tho-Ca Mau Corridor (Corridor No. 25)**: The objective is to provide safe, stable and efficient service by developing an all-weather, flood-proof transport system. Strategies include rehabilitation of existing roads and waterways, rehabilitation/improvement of ports (both for river and sea vessels), improvement/upgrading of roads and ports, and intermodal integration.

19) **Can Tho-R91-Cambodia/Sihavoukville Port Corridor (Corridor No. 26)**: The objective is to promote rural development and cross-border trade between Vietnam and Cambodia by providing an all-weather transport corridor. Strategies include rehabilitation of existing transport infrastructure and improvement of roads and waterways.

20) **Cuu Long-Cambodia Corridor (Corridor No. 27)**: The objective is to develop an international waterway providing safe, stable and economic

transport of goods. Strategies include rehabilitation and improvement of major river ports and waterways, upgrading of ports and waterways according to demand, and development of river ports as points for modal integration, with appropriate institutional arrangements.

Strategies for North and South Growth Zones

The corridor approach has been further refined for the growth zones in the north and the south. For these areas, it is expected that further exploitation of possible interaction between corridors will enhance their development potential as explained below.

Northern Growth Zone: At present, the growth triangle refers to the area enclosed by Hanoi, Hai Phong and Quang Ninh. However, there is another growth corridor towards the Ninh Binh/Nam Dinh areas. By strengthening the link between Ninh Binh/Nam Dinh and Hai Phong/Quang Ninh, the area of the growth triangle will expand. The growth zone would be provided with multimodal transport including roads, rail, inland waterway, coastal shipping, maritime shipping, and air transport. For the zone to be competitive it is critical that efficient, deep-water port facilities are available, with good intermodal connections (see Figure 5.3).

Southern Growth Zone: Similar to the north's traditional concept of growth triangle is the area bordered by HCMC-Bien Hoa and Ba Ria-Vung Tau. The HCMC-Can Tho corridor is regarded as a separate growth area. However, this triangular development, is likely to accelerate the heavy concentration of development in HCMC. Therefore, it is desirable to redefine the growth triangle on a larger scale by strengthening the linkage between Can Tho-My Tho and Ba Ria-Vung Tau where a future strategic gateway port will be located (see Figure 5.4).

Cross-border Corridors

There are 12 cross-border corridors, seven of which are primary and five are secondary. For all these cross-border corridors, transport demand will not be so large as to require a road of more than two lanes. Although there will be opportunities for cross-border cooperation with neighboring countries, there would be uncertainties about whether or not adequate policies and necessary infrastructure and institutions will be mutually provided. Moreover, the construction cost for many corridors will be considerable due to terrain conditions (see Figure 5.5). However, for primary routes, improved transport service and rehabilitated transport infrastructure should be provided to promote cross-border movement in line with Vietnam's policy of integration into the region. For secondary routes, upgrading of existing roads to all-weather condition is required, particularly from the viewpoint of improving rural access.

Figure 5.3
Long-term Transport Network Development Strategies for the North Growth Zone [1/]

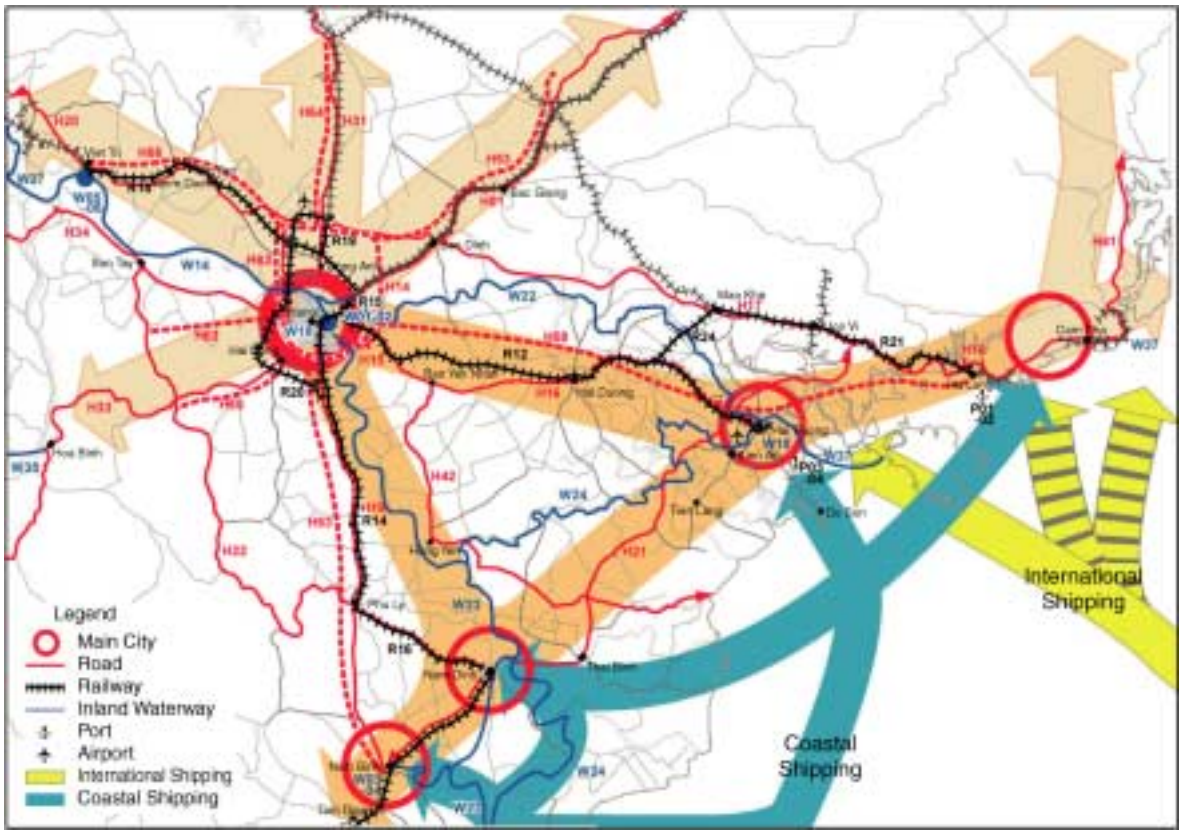
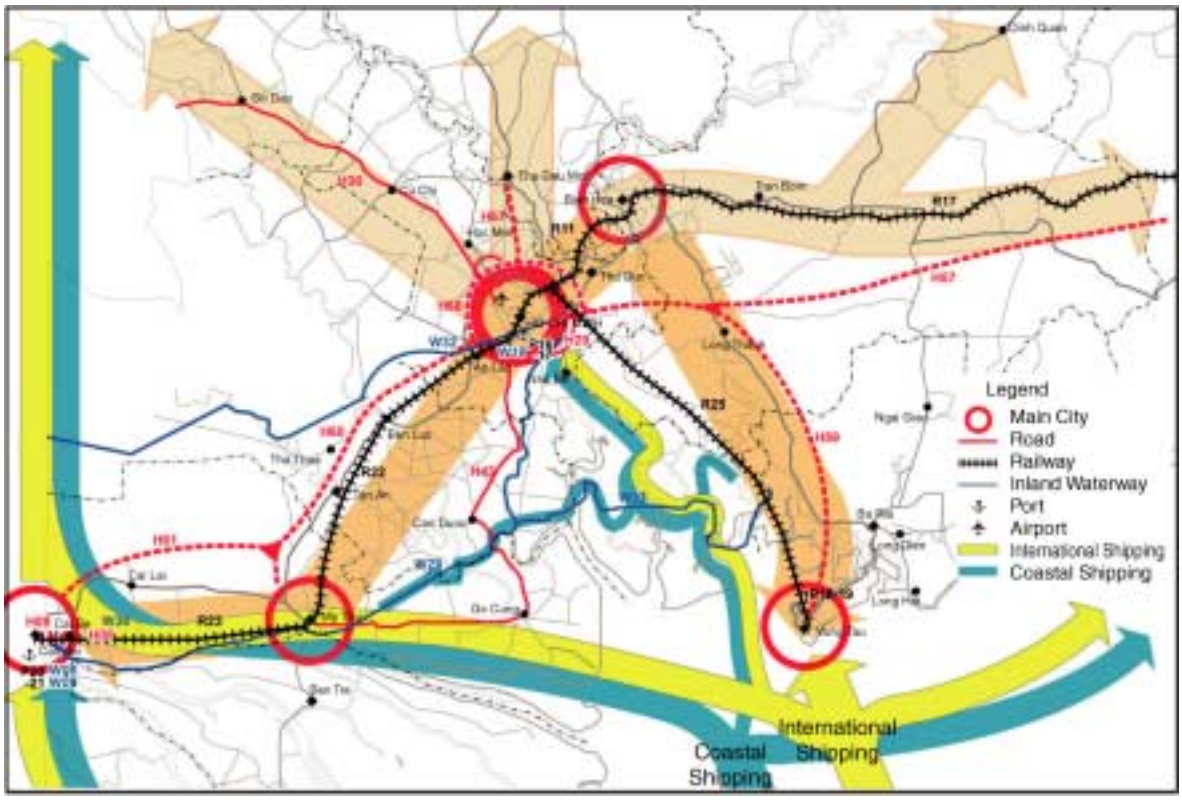


Figure 5.4
Long-term Transport Network Development Strategies for the South Growth Zone [1/]

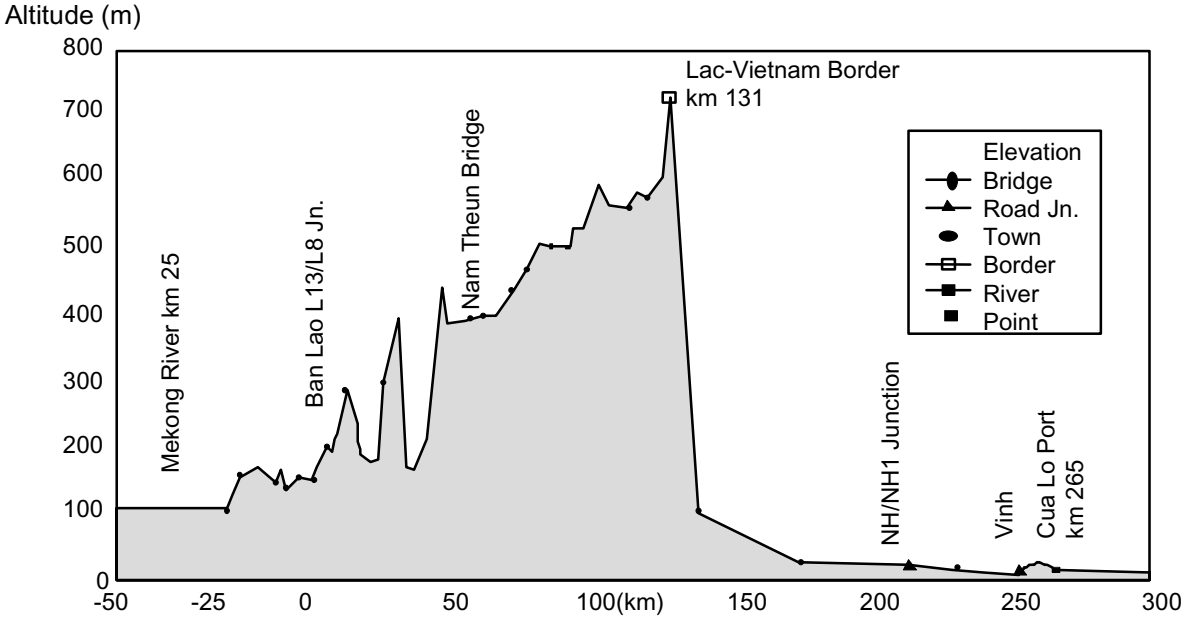


1/ Symbols (e.g. R12, H43, … etc) denote code no. of the identified/possible projects which comprise long-term strategies.

Table 5.10
Summarized Strategies for Cross-border Corridors

Corridor		Classification	Existing Modes
No.	Name		
8	Quang Ninh-China	Secondary	Road
9	Hanoi-Lang Son-China	Primary	Road, Rail
12	Hanoi-Lao Cai-China	Primary	Road, Rail, IWT
13	Hanoi-Dien Bien Phu-Northern Lao	Secondary	Road
14	Vinh-R8-Lao/Vientiane	Primary	Road
15	Vung Ang-R12-Lao/Thakhet	Secondary	Road
16	Dong Ha-R9-Loa/Savannakhet	Primary	Road
17	Danang-R14B-14-40-Lao/Pakse	Primary	Road
19	Qui Nhon-R19-Central Cambodia	Secondary	Road
23	HCMC-Cambodia/ Phnom Penh	Primary	Road, IWT
26	Can Tho-R91-Cambodia/Sihanoukville Port	Secondary	Road, IWT
27	Cuu Long-Cambodia Water	Primary	Road, IWT

Figure 5.5
Typical Cross-section of an East-West Corridor (Vinh-R8-Lao/Vientiane Route)



Strategy for Institutional Development

Two main long-term institutional development issues concern (1) the role of the private and public sectors in the transport sector, and (2) the distribution of state responsibilities between government agencies (especially between national and local government). How these issues are resolved in future years will affect the distribution of responsibilities within the transport sector.

The Role of the Public and Private Sectors: Under current economic policies which involve encouragement of the private sector and equitization of state-owned enterprises, the private sector will play an increasingly dominant role in the provision of transport services. Experience from other countries shows that there is no economic case for keeping most transport operations in state-ownership so there is a strong case for implementing the government's equitization program (mainly for road and inland water transport) and eventually extending its scope to include large parts of the railway, maritime and aviation subsectors.

However there are many obstacles to equitization, including the unfavorable business environment, limited interest by potential investors, limited financial resources and serious issues concerning how to deal with surplus labor (which is estimated by VINALINES to be as high as 50% of staff in the ports). Therefore a step-by-step approach is anticipated to be followed in which initial experience with equitizing small-scale enterprises is used to tackle the more challenging issues involved in equitizing large scale enterprises. The private sector already plays a dominant role in road and inland water transport operations. Under such a step-by-step approach, the private sector will play a small but increasingly important role in providing transport services in other subsector such as shipping and ports. The private sector role in construction and maintenance of infrastructure and other support services will also grow under current policies.

However it is clear that, even if the present equitization program could be accelerated, the process will take many years. Reform of existing SOEs cannot wait until then because of the need to foster competition and efficiency in the transport sector. Therefore institutional reforms of the SOEs should be pursued in parallel with equitization - giving the SOEs greater autonomy but subject to stricter financial discipline, corporatizing large enterprises such as ports and airports, and reorganizing the railway to make it more market-oriented.

Although the state can be expected to continue to play a dominant role in infrastructure provision and management, there is a small but important role to be played by the private sector in certain areas such as in the provision of toll roads/bridges, port and airport terminal operations (often using privately-finance equipment on infrastructure leased from the state). The scope for this is discussed more fully in the next section on financing opportunities.

Distribution of Responsibilities between Government Agencies: In accordance with the function of the infrastructure, it is appropriate for central and local responsibilities to be assigned as follows:

- primary and secondary infrastructure is managed mainly by central government, through the specialized departments of MOT such as VRA, VIWA and VINAMARINE,
- tertiary infrastructure is managed mainly by provincial and district government.

In practice such an approach could be implemented with considerable delegation of responsibilities - keeping ultimate control over planning and standards at the highest level while delegating direct management responsibilities to subsidiary organizations (especially local government or even private maintenance units).

Depending on how the infrastructure is ultimately classified into primary, secondary and tertiary, and how fast government decision-making is decentralized, this approach to assigning responsibilities will involve various changes to current responsibilities. The main likely changes are as follows:

- substantial powers and responsibilities presently concentrated in the MOT and other ministries will be delegated to the specialized departments,
- the specialized departments will assume the project implementation functions of the PMUs which will be abolished,
- many minor roads and waterways currently under MOT responsibility could be classified as tertiary and placed under local government management, and
- direct management responsibility for most inland water ports (generally classified as tertiary) will be transferred from enterprises under VIWA to corporations under provincial government (although VIWA should continue to have regulatory oversight).

Other changes in infrastructure responsibilities can be expected either to result from the completion of the government's policy of separating oversight and commercial responsibilities, or from increasing delegation of direct management responsibilities, including:

- corporatization of public maritime ports as independent businesses outside the umbrellas of VINALINES and VINAMARINE, preferably with one corporation for each major port or group of smaller ports, in order to promote competition between ports, but with VINAMARINE retaining planning and regulatory oversight responsibility,
- corporatization of airports, possibly with one corporation for each of the three major regions of the country, divested from CAAV but with CAAV retaining planning and regulatory oversight responsibility.

For all ports and airports and for the railway further delegation can occur by the corporations leasing facilities for use by private operators as described above.

Recommended Strategy for Institutional Development of Sector Management: Effective sector management requires a greater degree of decentralization, with government focussed on core oversight and infrastructure management functions, employing better trained personnel. This calls for an overall strategy with three elements:

- Enhancing Management Systems, requiring measures such as delegating organizational responsibilities to the lowest possible unit, definition of modern management systems and tools for planning, programming, financing and database handling, implementing these systems with clear guidance documents, monitoring and control mechanisms,

- Divesting Commercial Functions, to complete the separation of commercial and oversight functions and promote competition in supply of services such as contracting of construction and consulting services,
- Human Resource Development, requiring measures such as clear policies, stronger training incentives, enhanced training capacity and basis for finance.

Strategies for Infrastructure Funding – Constraints and Opportunities

Funding Scenario: Funding of transport infrastructure in Vietnam is severely constrained due to a number of reasons such as low level of general revenue, inadequate pricing, lack of user charge policy, inefficient use of available resources, etc. Thus the government has no choice but to rely on ODA. An exercise has been made to estimate the future funding scenario of the transport sector for different assumptions about the level of dependency on ODA.

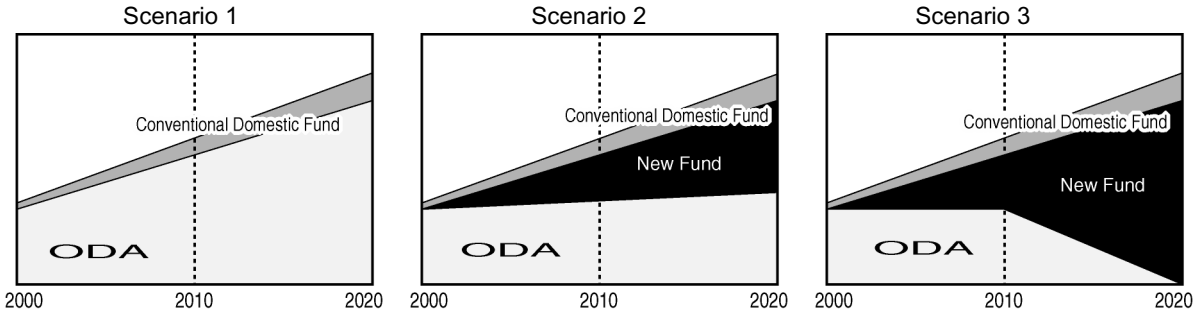
The results of the analysis clearly show that increasing dependence on ODA or, conversely, drastic reduction in dependence on ODA are unrealistic options. Therefore the most practical and likely policy direction for Vietnam's transport sector is to sustain current levels of ODA funding and, at the same time, to strengthen domestic funding capacity through the creation of new fund sources, improvement of financial management capacity, private sector participation, and so on. Considering the widening gap between fund requirements and availability, it is particularly crucial to expand substantially new charging mechanisms.

Table 5.11
Required Funding Amount by Source and Scenario[1/]

US$ billion

Period	Fund Source	Scenario 1		Scenario 2		Scenario 3	
		Low[2/]	High[2/]	Low	High	Low	High
2001-2010	Conventional	1.2	1.3	1.2	1.3	1.2	1.3
	ODA	10.5	11.3	8.8	9.5	7.8	7.9
	Additional Requirement	-	-	1.7	1.8	2.7	3.4
	Subtotal	11.7	12.6	11.7	12.6	11.7	12.6
2011-2020	Conventional	2.1	2.5	2.1	2.5	2.1	2.5
	ODA	18.4	22.5	11.4	13.9	5.1	5.8
	Additional Requirement	-	-	7.0	8.6	13.3	16.7
	Subtotal	20.5	25.0	20.5	25.0	20.5	25.0
Total (2001-2020)	Conventional	3.2	3.8	3.2	3.8	3.2	3.8
	ODA	28.9	33.8	20.2	23.4	12.9	13.8
	Additional Requirement	-	-	8.7	10.4	16.0	20.0
	Total	32.1	37.6	32.1	37.6	32.1	37.6

Source: VITRANSS
1/ "High" and "low" denote high and low future assumed GDP growth rates.
2/ The scenarios assumed in the analysis are as follows:



Heavy dependence on ODA will continue or increase in the future.

Dependence on ODA decreases gradually to about 50% in the next two decades.

The current dependence level on ODA will continue in the next decade and gradually become nil.

Strengthening of Funding Capability: For a government to strengthen its funding capability for transport development, there are basically three options:

- Increase budget by developing new fund sources through expansion of user charges,
- Curtail costs by adopting more economical methods of development or by improving efficiency and management in infrastructure development and operation, and
- Shift fiscal responsibility more to the private sector, including foreign investment.

There are options for the Government of Vietnam to strengthen its funding capability.

(1) Potential New Revenue Sources: In order to estimate the potential level of new revenue sources, an exercise was made using selected charges on road vehicles. The assumed charges include fuel tax (10% of the market price), vehicle acquisition tax (10% of new-vehicle price) and vehicle ownership tax (1% of new-vehicle price per year). The result showed that an approximate total of US$ 37.5 billion could be raised in the next two decades.

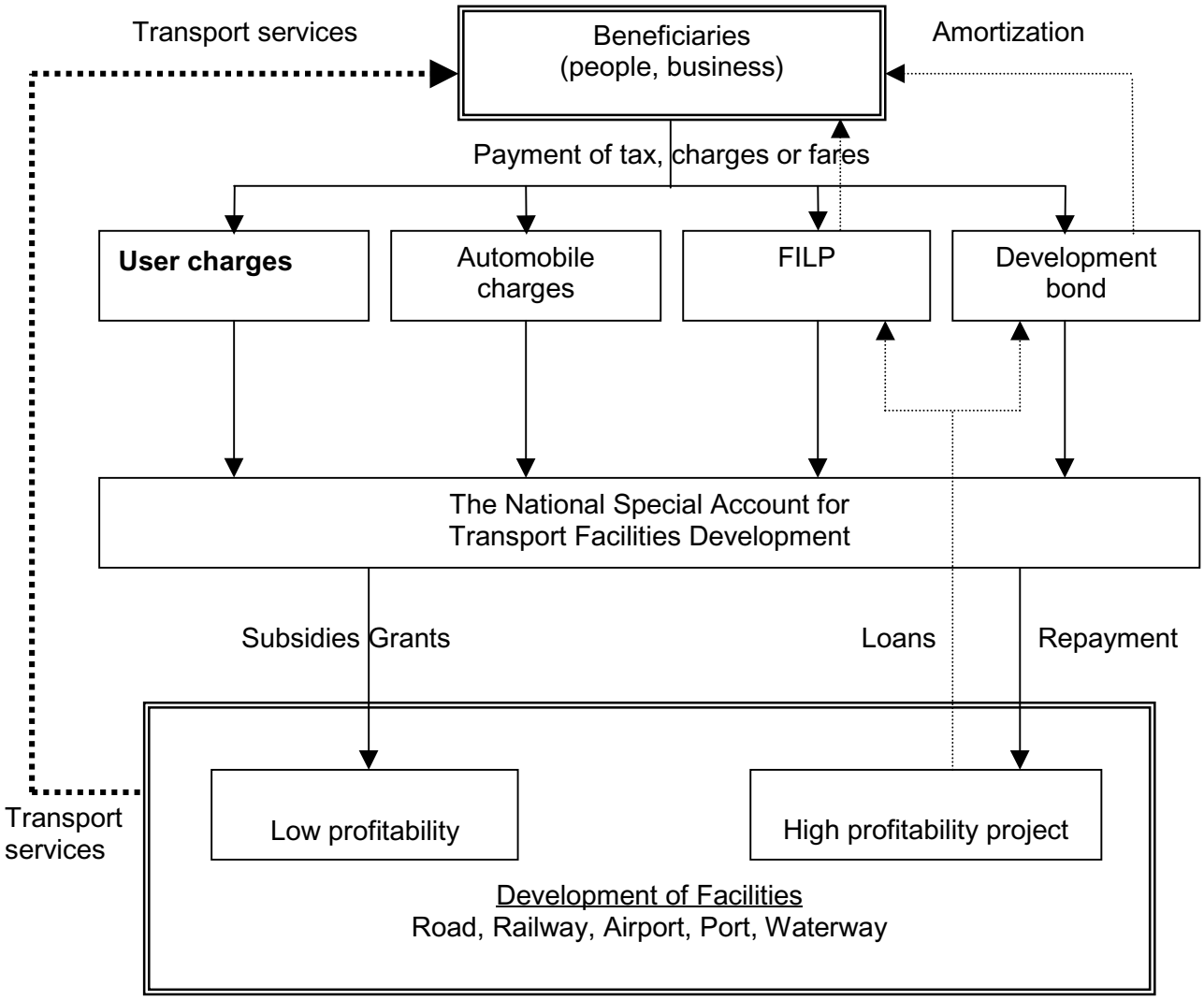
Table 5.12
Possible Revenue Sources

Period	Fuel Tax	Vehicle Acquisition Tax	Vehicle Ownership Tax	Total
	10% of Market Price	10% of Vehicle Price	1% p.a. of New Vehicle Price	
2001 –2010	2.1	7.5	5.5	15.1
2011 – 2020	3.7	9.2	9.5	22.4
Total	5.8	16.7	15.0	37.5

Source: VITRANSS

(2) Concept of Special Account: User charges and FILP (Fiscal Investment and Loan Program) are the major candidate measures for expanding the government budget. The former meets the "beneficiaries-pay" principle and can be used more extensively considering the current charge level and future economic growth. The latter meets the condition of fair shouldering of the cost among generations (transport infrastructure has a long life), although it should be clearly institutionalized before it is mobilized. Another option is the Special Account for Transport Facilities Development, which mobilizes user charges, FILP, development bonds, among others, to develop transport facilities. A similar concept has been used in Korea where it is used not only for roads but for other modes such as railways and ports.

Figure 5.6
Conceptual Framework of Special Account for Transport Facilities Development



(3) Private Sector Participation: Private sector participation in provision of transport infrastructure is common in many countries (see Table 5.6). In developing countries, however, it is not easy for the private sector to implement

successfully the project, due to various risks such as government interference, insufficient legal/institutional basis and socio-economic instability. The following conditions need to be satisfied to mobilize private funds:

- The financial position of counterpart organizations, public corporations or SOEs should be satisfactory.
- Contract commitments should be fully honored.
- Transparency in approval process or in selection of suppliers or contractors should be maintained.
- Irrational intervention by the government in business operation and management should be avoided.
- Related laws and regulations should be promulgated.
- Information should be disseminated.
- Government guarantee for the project should be considered if it is the prerequisite of private investment.

Table 5.13
Public-Private Role-sharing for Transport Infrastructure Development and Operation

Sector	Item		Player[1/]		
			National Gov't.	Local Gov't.	Private Sector
Road	Infrastructure	• Primary/Secondary	✓✓	-	-
		• Tertiary	✓	✓✓	-
		• Expressway	✓	✓	✓✓
	Public Transport	• Passenger	-	✓	✓✓
		• Freight	-	✓	✓✓
		• Terminals	-	✓	✓✓
Rail	Infrastructure	• Track/facilities	✓✓	✓	-
		• Station	-	✓✓	✓
	Operation	• Passenger	-	-	✓✓
		• Freight	-	-	✓✓
Port	Infrastructure	• Primary/Secondary	✓✓	✓	✓✓
		• Tertiary ports	✓	✓✓	✓
	Facilities/Operation	• Primary/secondary	✓	-	✓✓
		• Tertiary ports	-	✓	✓✓
Inland Waterway	Waterway	• Primary/Secondary	✓✓	✓	-
		• Tertiary	✓	✓✓	-
	River Port	• Infrastructure	✓✓	✓✓	✓
		• Operation	-	✓	✓✓
Airport	Infrastructure	• Primary/Secondary	✓✓	✓	✓
		• Tertiary	✓	✓✓	-
	Terminals/operation	• Primary/Secondary	✓	✓	✓
		• Tertiary	✓	✓	-

1/ Symbol denotes as follows: ✓✓: Primary role, ✓: Secondary role

6 MASTER PLAN

Objectives and Broad Priorities[21]

Objectives: The Master Plan is a ten-year plan that gives a more concrete direction to the country's transport system and services. It has the long-term objective of making Vietnam's transport sector competitive and equitable, where consumer needs are satisfied at minimum cost. The Master Plan aims for a transport sector that sustains balanced development of the country, protects and enhances the environment and facilitates international integration at GMS and ASEAN levels, as well as globally.

Although the VITRANSS' main focus is on improvement and development of the primary and secondary interprovincial transport network and operation, due consideration is also given to integration and development of the tertiary network and rural and urban transport, so that the entire transport network functions as a system with no missing links or bottlenecks. The VITRANSS does not, of course, make optimistic assumptions that the country will be provided with brand-new, modern transport infrastructure and equipment within the Master Plan period. However the VITRANSS does endeavor to enable the country to be effectively integrated, with a better-maintained transport system and affordable transport services.

Broad Priorities for the Master Plan: Vietnam's transport sector is constrained in terms of funding capacity. Available resources should thus be effectively allocated. Accordingly, broad priorities have been defined for allocating the likely available budget of the government. Broadly, these priorities are as follows.

1) Maintenance, rehabilitation and minor improvements outside the VITRANSS project list. It is assumed that about 20% of the budget envelope will be allocated for this.
2) Projects that remove traffic bottlenecks and strengthen the network to meet demand.
3) Growth corridors in the north, south and central areas, which are expected to act as engines of national economic growth. Strategic infrastructure for land, water and air transport should be provided and integrated with transport links to the global market and neighboring countries.
4) Strengthening of north-south integration and enabling the smooth flow of people and goods.
5) Urban transport before congestion chokes the cities, especially in large urban areas, and adversely affects the efficiency of interurban transport.

[21] Whereas the Master Plan in the Study mainly aims to improve and develop interurban transport, it is to be noted that the rural transport issue is also seriously being attended to and has a separate strategy being developed by the government.

Planning Considerations for Subsectors

Road and Road Transport: In the past decade, investment in Vietnam's transport sector was rather concentrated on primary roads and associated with institutional reforms. As a result, road transport has become very competitive and its role in the transport sector has been growing rapidly. The role of road transport will become even more important as the economy grows and diversifies.

An analysis in the Study indicates that further investment in primary roads will become economically less attractive, as investment in other subsectors, such as ports, shipping and railway, become more viable in the future. This analysis also indicates that a balanced development among the available modes is the most economical solution for the future transport network. As a mode which can provide door-to-door service and often functions as the first and end modes of line haulage transport, the potential role of road transport is enormous, including for intermodal transport, containerization and facilitation of cross-border transport.

Establishing a proper road maintenance system with adequate finance is vital for the country's economy because reducing expenditure on maintenance increases vehicle operating costs by a much larger amount; attempts to save money by investing less for road maintenance will cost the country much more in the end. Resolving the main institutional constraints on road maintenance and finance in the next few years is necessary to safeguard past and ongoing road transport investments.

The key criteria to identify road projects in the Master Plan are specifically as follows:

- Primary and secondary road networks[22] will be completed by accelerating the implementation of ongoing and committed projects as well as resolving bottlenecks and developing strategic links with adequate standards and pavement conditions.
- Bottlenecks which are expected to hinder smooth flow of interprovincial traffic will be attended to in advance before the situation becomes critical, and therefore more costly, especially in and around large urban areas.
- The second North-South link alternative to NH01 will be developed to comply with the level of demand.
- International links between the adjoining countries of China, Laos and Cambodia will be improved to all-weather standard. The 14 road links should be prioritized according to demand and international agreements.
- In general, future investments in roads should undergo a more critical economic evaluation. Prioritization is not only applied within the road subsector but also applied to other transport subsectors as well. Of the identified seven major

[22] It is proposed in the VITRANSS that national roads be reclassified based on function – whether primary or secondary road.

growth corridors, the critical ones are Hanoi-Nam Dinh/Ninh Binh, Hue-Danang-Hoi An, HCMC-Da Lat-Nha Trang and HCMC-Can Tho.
- Whereas rural roads are given high priority, and projects/programs are underway, network integration and improvement of provincial roads[23] to link them with the primary/secondary network and rural roads should be adequately considered.

The road development plan involves removal *of* bottlenecks in key places in the strategic network and strengthening of rural access. However, efficiency gains from using modern (often larger) trucks, buses and other motor vehicles require a considerable private sector investment, so creating an attractive business environment in the transport sector is crucial to achieve the benefits from road investment. To reduce the enormous burden and suffering caused by road accidents, improvements must be made through a range of interventions.

Railway Subsector: The gap between the current institutional/operational capacity of VR (constrained by institutional constraints and limited management capacity), and its huge potential, is a central issue in the Master Plan. Reducing this gap is a considerable challenge requiring years of reform to establish a commercial framework, a more market-oriented organization and a firm contractual basis for providing state assistance. Until 2005, planned investment is limited to that required to sustain operations, giving time for the railway's institutional capability for handling the proposed investments to be increased. High priority should be given to establishing realistic business plans and a reformed organization to handle potentially much more traffic after 2005.

On condition that institutional constraints are removed and management capacity is adequately increased, the areas of further investment will include the following:

- Improvement and expansion of the lines in the growth corridors such as Hanoi-Hai Phong (101 km) and Saigon-Bien Hoa (29 km).
- Following rehabilitation, the north-south link will be strengthened, including the construction of additional stations and a new Hai Van Pass tunnel.
- For links in urban areas, especially in Hanoi and HCMC, conflicts with urban traffic should be reduced by elevating critical sections before the situation becomes unmanageable.
- Replacement of rolling stock should be properly undertaken on a strictly commercial basis, that is, if it will contribute to the profitability of the railway.

Inland Waterway Subsector: The prospects for growth of inland water transport are fairly modest, but significant gains in terms of efficiency can be achieved from dredging of rivers to allow larger, more efficient vessels to operate. Achieving these benefits requires an attractive business environment so that private

[23] Provincial roads, as well as rural roads, mostly fall under the tertiary category and not adequately covered by the VITRANSS.

investment will be attracted. Ports must be commercialized so that they no longer remain transport bottlenecks which deter use of more efficient vessels.

Regarding infrastructure management, improved maintenance is absolutely crucial so that waterways will not soon become silted up again. This requires efficient dredging maintenance, better maintenance management and a mechanism to ensure a stable fund source for maintenance. The provision of navigational aids that will allow night-time navigation is also essential to raise the vessels' productivity.

Key areas of investment for the Master Plan period are as follows:

- Improvement and strengthening of inland waterways and related ports along selected growth corridors such as Quang Ninh-Hai Phong-Hanoi waterway, Quang Ninh-Pha Lai waterway, Day River (Cua Day-Ninh Binh), Red River (Lach Giang-Nam Dinh-Hanoi), DNC (Day-Ninh Co) canal, Hanoi/Khuyen Luong port, and Ninh Binh/Ninh Phuc port in the north and HCMC-Can Tho waterway, Saigon-Dong Thap Muoi-Long Xuyen waterway, Thi Vai-Nuoc Man canal, and My Tho/Can Tho IWT ports in the south.
- Improvement of two international waterways, such as Han River via Can Tho and Thien River via My Tho to Cambodia, to accommodate larger vessels and provide them with a better transport environment.
- Expansion and improvement of rural IWT including waterways and river ports managed by local governments.
- Improvement of river transport safety including night-time navigation of heavily trafficked routes (Class A and B routes) and improved daytime navigational services on the rest of the routes
- Upgrading of existing two IWT schools to meet the increasing demand for training of river crew as IWT services expand and modernize.
- Strengthening of safety standards for IWT vessels and removal of financing bottlenecks constraining fleet development.

Maritime Subsector: Vietnam's port sector services have not adequately kept up with growing demand, hence port congestion has worsened.[24] Investment in Hai Phong and Saigon has increased handling capacity, but critical issues common to Vietnamese ports, such as narrow and shallow water area and inefficient cargo handling, have yet to be solved. Attempts at expansion of the Vietnamese international shipping fleet have also not resulted in increased market shares due to poor competitiveness. On the other hand, coastal shipping has grown yearly and new services, including liner container operation, have commenced. In order for Vietnam to sustain its future economic growth, the development of competitive gateway ports is critical to support efficient and economic international shipping services.

[24] Between 1991 and 1998, traffic at MOT ports increased from 796,000 tons to 1.7 million tons (2.1 times), and the total length of berths increased from 6,647 m to 8,267 m.

The role of coastal shipping is anticipated to grow substantially not only for conventional bulk goods, but also for general cargo. Short-term port investments are proposed at general-purpose ports, taking into account the scope for port productivity improvement and investment in modern navigational aids. Port planning must be strengthened to minimize overall development costs and avoid adverse environmental impacts. Responsibilities between maritime and inland water transport must be clarified. However, the role of coastal shipping will depend heavily on the extent to which shipping management can be improved and smooth links between coastal shipping and other modes can be established (especially better port services to encourage investment in modern vessels with efficient handling equipment).

To tap private sector investment and foreign know-how, the business environment must be considerably improved in the next five years by reducing the dominant presence of VINALINES and its dual influence over both shipping and ports, and reducing barriers to foreign investment. In addition, new financial mechanisms for modernizing the coastal shipping fleet are required and it is necessary for coastal shipping to pay its fair share of the cost of infrastructure (instead of being subsidized as at present).

Investment areas to be focused on are as follows:

- Development of an efficient nationwide port network by channeling investments to nine ports (port complex) – Hai Phong Port, Quang Ninh Deep-sea Port (so far, Cai Lan Port), Cua Lo Port, Danang Bay Port System, Qui Nhon Port, Nha Trang Port, Saigon River Ports Group, Vung Tau-Thi Vai Deep-sea Port, and Can Tho Port.
- Construction or expansion of nine specialized ports to serve specialized shipping such as Dung Quat Port for the exclusive use of oil tankers.
- Development of international gateway ports in the north, central and south:
  (a) Quang Ninh Deep-sea Port, including expansion of Cai Lan Port with Ha Long Bay environmental protection measures, followed by a coastal space management study to determine the appropriate gateway port site, before development of additional berths.
  (b) Danang Bay Port System, including expansion of Tien Sa Port by 2005 followed by the development of Lien Chieu Port.
  (c) Vung Tau-Thi Vai Deep-sea Port, requiring a more detailed master plan study followed by the development of a deep-sea port at an appropriate location(s).
- Improvement of selected local ports to improve local access and meet demand.
- Installation of navigational aids and deployment of SAR ships to enhance maritime safety on Vietnamese waters.
- Upgrading of seafarers' education to meet international maritime conventions such as STCW-95, SOLAS and ISM Code.
- Provision of adequate financing mechanisms to facilitate fleet development.

Ports are expected to take a leading role in developing the hinterland. Developers who promote new industrial estates, particularly those facing the sea or rivers, badly need good access ports. Of relevance are those of Vung Ang, Chan May, Ky Ha, Dung Quat, and Cai Cui among others. However, port development should be coordinated with hinterland development to avoid capacity underutilization.

In Vietnam, there are 67 industrial estates: 14 in the north, 13 in the central area and 40 in the south. Only 10 estates have successfully leased more than half of their land, all located in the south. Even Nomura Haiphong, nearby Hai Phong Port, the best furnished industrial estate in the north, suffers from low occupancy. Therefore, it would be prudent to examine the viability, timing and location of new ports adjacent to industrial estates.

The VITRANSS guidelines to develop new ports in relation to industrial development are as follows:

(a) Dung Quat Port will be developed to serve crude oil and refined oil products initially, and then to expand its general cargo capacity in line with Dung Quat Industrial Zone development.
(b) Cai Sao Port will be constructed only after Can Tho Port has no further expansion capacity.
(c) The VITRANSS traffic demand forecast indicates insufficient future traffic at Vung Ang, Chan May, Ky Ha and other ports serving industrial estates, to justify their implementation even taking transit cargo into account.

Aviation Subsector: This sector is expected to continue to grow rapidly and there is a need for substantial upgrading and development of infrastructure. Better planning and evaluation capacity is required to target investment where it will be justifiable, and infrastructure charges must be revised to finance them on a commercial basis. To meet the required high standards of safety and passenger service, especially under the increasingly liberalized, competitive environment in the region, management of airlines and airports must be strengthened. This requires commercialization of airports, removal of fares controls and introduction of more competition in the airline industry.

The areas to be covered in the Master Plan are as follows:

- Establishment of a hierarchical and functional airport network in accordance with ICAO standards including three primary airports (3,600-meter runway, 24-hour operation), three secondary airports (2,000-meter runway, 24-hour operation) and 13 tertiary airports (1,200-2000-meter runway, daytime operation).
- Upgrading and expansion of the three primary airports of Noi Bai, Danang and Tan Son Nhat.
- Expansion of three secondary airports – Cat Bi (Hai Phong), Phu Bai (Hue) and Nha Trang – in the designated growth corridors and near famous tourism destinations.

- Construction of four tertiary airports in Cao Bang, Lao Cai, Dong Hoi, and Chu Lai. Except for Cao Bang the others used to have airports for civil or military use which are still available. The existing nine tertiary airports will be improved to enhance air safety and meet increasing demand.
- Implementation of the CNS/ATM program submitted by Vietnam to ICAO.
- Provision of new training equipment for the Civil Aviation Training Center of Vietnam.

Multimodal Transport and Other Aspects: The development of an efficient multimodal transport in Vietnam is essential to promote foreign trade, requiring both investments in container handling facilities and introduction of new systems. Infrastructure and institutional bottlenecks must be reduced to promote cross-border transport of all types. Supporting policy recommendations include introducing/simplifying the regulatory framework, encouraging foreign participation in investment and targeting government investment in the most effective way.

Initial Screening and Identification of Master Plan Candidate Projects

The initial long list of projects, derived from the proposed long-term strategies, were screened to identify candidate projects for the Master Plan.[25] The projects in the initial list were placed into one of three groups:

Group 1: Ongoing/committed projects. Taken as given in the Master Plan (see Appendix 6.1).
Group 2: Projects proposed in the VITRANSS as candidate projects. These projects will be evaluated and selected for the Master Plan (see Appendix 6.2).
Group 3: Projects proposed in the VITRANSS as long-term projects, therefore excluded from the Master Plan.

Group 2 projects are composed of (1) transport equipment, such as rolling stock, vessels and aircraft, which are basically acquired by operators in accordance with financial viability (4 projects), (2) projects related to safety and training (4 projects), and (3) infrastructure projects (95 infrastructure projects and 15 equipment/ facilities/system projects), (see Appendix 6.2). These projects are also categorized by subsector, as follows:

Road:
(1) Primary road network development (8 projects)
(2) Secondary road network development (20 projects)
(3) Road safety promotion (1 project)
(4) Expressways (9 projects)

Railway:
(1) Rehabilitation and minor improvement (4 projects)
(2) Capacity expansion of critical sections (14 project)
(3) Construction of new lines (4 projects)

[25] The long list is excluded from the Summary Report but included in the Main Text.

(4) Operation and rolling stock improvement (2 projects)

IWT:
(1) Port improvement (9 projects)
(2) Waterway improvement (12 projects)
(3) Fleet and safety improvement (2 projects)

Port & Shipping:
(1) Port expansion/development (10 projects)
(2) Operation and safety improvement (6 projects)

Air:
(1) Airport expansion/development (6 projects)
(2) Construction of air traffic terminal (10 projects)
(3) Aircraft procurement (1 project)

The total cost of these candidate projects is roughly US$ 26 billion.

Evaluation of Master Plan Candidate Projects

Methodology: The candidate projects (a total of 118) have been evaluated primarily from the economic viewpoint because the nature of the VITRANSS projects is to serve the interprovincial level of transport needs. Some candidate projects, which are difficult to be assessed quantitatively, are prioritized based on the judgement of the Study Team. A total number of 110 projects underwent evaluation, 95 of which were evaluated quantitatively from the economic viewpoint as well as comprehensively.

Economic Evaluation: The economic evaluation was done using the network analysis applied in the Study, based on a number of assumptions.[26]

Other Evaluation Criteria: Other criteria employed in the project evaluation included: (1) Network integration: Contribution to strengthen the network; (2) International linkage: Contribution to strengthen international linkage; (3) Cost recovery: Opportunity to recover the cost of investment in the project; (4) Social equity/poverty alleviation: Contribution to social equity and poverty alleviation; (5) Environment: Level of impact of the project on the environment; and (6) Resettlement and ROW acquisition: Magnitude of requirements for resettlement and right-of-way acquisition

For (1), (2), (3), and (4), the results of qualitative assessment were translated into EI equivalent points according to the extent of the project's impact: 3 points for

[26] The assumptions are: (1) All projects are implemented in three years (2002-2004) and put to public use in 2005; (2) Project benefit comprises the savings in operating cost and passenger time cost; and (3) Output indicator of the analysis is EIRR (economic internal rate of return). In this economic evaluation, however, the benefit of each project was calculated by allocating the entire economic benefits of the subsector to each project in proportion to the estimated transport cost reduction by the project. Therefore, it is called EI (economic indicator) in this exercise.

significantly positive impact, 1 point for moderately positive impact, and zero for minimal positive impact.[27]

Evaluation of Equipment/Facility/System: There are 15 projects difficult to evaluate using the above process. They were evaluated as follows: projects proposed in relation to infrastructure projects are given the same points as the infrastructure projects, and projects required to be implemented under international agreements are given higher points.

Evaluation Indicator: Thus the result of the project evaluation is a total of EI (%) value and additional points are given based on the evaluation of non-economic factors. The evaluation indicator provides the basis for categorizing the projects by priority (see Appendix 6.3). "A" and "B" projects are considered for inclusion in the Master Plan.

Group A: projects with more than 20 points and higher priority than B
Group B: projects with more than 20 points
Group C: projects with less than 20 points

Master Plan Program

Selection of Master Plan Projects: A total of 116 projects considered necessary to provide the transport network and services intended under the Master Plan period have been selected (see Table 6.1 and Figure 6.1 for the location of infrastructure projects).

- Ongoing and committed projects (33 projects)
- Safety and training projects (4 projects)
- Infrastructure projects (64 projects)
- Equipment/facility/system projects integrated with the above infrastructure projects (15 projects)

Investment Requirement: The investment requirement of the Master Plan reaches almost US$ 11.5 billion in total capital costs. Excluding that part of the investment required for revenue-generating projects, such as expressways and ports, and the cost of transport equipment that operators should shoulder, the cost to government (central and local) is estimated to be about US$ 10.5 billion (see Table 6.2). Road accounts for about 65% of the cost to government, followed by rail (13.2%), port and shipping (11.5%), air (6.6%), and inland waterway (3.6%), However, the road subsector includes US$ 3.6 billion for ongoing/committed projects which is almost 50% of the total road investment cost.

Another important area of investment in the transport sector is transport equipment for road, railway, IWT, shipping, and air subsectors. The total investment is roughly US$ 38 billion, 84% of which is for road vehicles (see Table 6.3).

[27] "Environment" and "Resettlement/ROW Acquisition" are used as reference and not converted to priority points.

Table 6.1
List of Master Plan Projects (up to 2010)

Sector	Project No.	Project	Status (original Schedule)	Fund Source	Project Cost (million US$)		Priority[1/]
					Total	2001-	
Road	***Primary Road Network Development***						
	H01	Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	Ongoing (1997-2000)	ADB	162.5	16.3	A
	H02	Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	Ongoing (1997-2000)	WB	236.6	23.7	A
	H03	2nd Road Development (Nha Trang-Quang Ngai; 600km)	Ongoing (1999-2002)	ADB	163.0	81.5	A
	H04	Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	Ongoing (2000-2004)	WB	180.0	180.0	A
	H05	Bridge Rehabilitation Project - Phase I (435km)	Ongoing (1995-2000)	JBIC	162.2	16.2	A
	H06	Bridge Rehabilitation Project - Phase II (752km)	Ongoing (1996-2001)	JBIC	211.0	105.5	A
	H07	Hai Van Pass Tunnel (2 lanes, 14km)	Ongoing (1998-2003)	JBIC	251.0	225.9	A
	H08	My Thuan Bridge (1,535m)	Ongoing (1997-2000)	Australia	79.3	15.9	A
	H09	Can Tho Bridge Construction	Ongoing (2000-2004)	JBIC	294.0	294.0	A
	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	New		67.0	67.0	A
	H12	Rehabilitation and Upgrading of HCM Highway	Ongoing (2000-2003)	GOV	380.0	380.0	A
	H13	National Highway No.14 Rehabilitation Project	Ongoing (2000-2003)	GOV	15.0	15.0	A
	H14	Hanoi Ring Road	New		256.0	256.0	A
	H15	Thanh Tri Bridge Construction	Ongoing (2000-2004)	JBIC	410.0	410.0	A
	H16	National Highway No.5 Improvement Project (remaining section, 91km)	Ongoing (1995-2000)	JBIC	215.6	215.6	A
	H17	National Highway No.18 Widening Projects - Phase 2 (remain section, 70km)	Ongoing (1998-2003)	JBIC	232.0	232.0	A
	H18	Bai Chay Bridge Construction	Ongoing (2000-2004)	JBIC	98.0	98.0	A
	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	New		76.0	76.0	A
	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	New		125.0	125.0	A
	H21	National Highway No.10 Upgrading Project (147km)	Ongoing (1998-2003)	JBIC	302.0	302.0	A
	H22	National Highway No.21 Upgrading Project (80km)	New		58.0	58.0	B
	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	New		90.0	90.0	B
	H24	East-West Corridor Project (ASEAN 8; NH9; 75km)	Ongoing (1999-2003)	ADB	30.0	24.0	A
	H25	East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)	Ongoing	GOV	65.0	39.0	A
	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	New		14.0	14.0	B
	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	New		150.0	150.0	B
	H29	Trans HCMC Highway Project (21.4km)	Ongoing (2000-2004)	JBIC	758.6	758.6	A
	H30	Trans Asia Highway Project (NH22 to Cambodia; 80km)	Ongoing (1999-2002)	ADB	144.7	144.7	A
	Secondary Road Network Development						
	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	New		148.0	148.0	B
	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	New		137.0	137.0	B
	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	New		223.0	223.0	B
	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	New		200.0	200.0	B
	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	New		101.0	101.0	B
	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	New		122.0	122.0	B
	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	New		92.0	92.0	B
	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	New		124.0	124.0	B
	H43	HCMC-My Tho Road (NH50) Improvement (80km)	New		79.0	79.0	B
	H45	Can Tho-Ha Tien (NH80) Improvement (200km)	New		197.0	197.0	B
	H46	Can Tho-Kien Giang-Ca Mau Route Improvement (200km)	New		197.0	197.0	B

1/ "A" refers to projects for implementation before 2005, while "B", after 2005.

Cont. Table 6.1

Sector	Project No.	Project	Status (Original Schedule)	Fund Source	Project Cost (million US$)		Priority[1/]
					Total	2001-	
	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	New		55.0	55.0	B
	H49	Secondary Road Network rehabilitation Program	New		94.0	94.0	A
	H50	Tertiary Road Improvement Project	New		569.0	569.0	A
	Road Safety						
	H52	Road Safety Improvement Program	New		30.0	30.0	A
	Expressway						
	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	New		350.0	350.0	B
		Subtotal			**7,944.5**	**7,131.9**	
Railway	***Rehabilitation and Minor Improvement***						
	R01	Hanoi-HCMC Railway Bridge Rehabilitation	Ongoing (1995-2001)	JBIC	104.0	47.0	A
	R02	Rehabilitation of Tracks & Bridges	New		325.0	325.0	A
	R04	Hai Van Pass Tunnel	New		389.0	389.0	B
	R05	Signal and Communication Equipment Modernization	New		128.0	128.0	A
	R07	Alarm at Crossings	New		21.0	21.0	A
	Capacity Expansion of Critical Sections						
	R08	New Stations for Train Exchange (100 stations)	New		26.0	26.0	A
	R11	Bien Hoa - Saigon section (29.4km)	New		130.0	130.0	B
	R12	Hanoi - Haiphong section (101.4km)	New		293.0	293.0	B
	R13	Hanoi - Giap Bat section (5.4km)	New		32.0	32.0	B
	Operation						
	R28	CTC and Computerization	New		136.0	136.0	A
		Subtotal			**1,584.0**	**1,527.0**	
Inland Water-way	***Port Improvement***						
	W01	Hanoi/Khuyen Luong Port Improvement	New		11.0	11.0	A
	W03	Ninh Binh/Ninh Phuc Port Improvement	Partly Ongoing	GOV	14.4	14.4	A
	W05	Viet Tri Port Improvement	New		3.5	3.5	B
	W08	My Tho/Can Tho Port Improvement for IWT	Partly Ongoing	WB/GOV	6.1	6.1	A
	W10	Vinh Thai (Vinh Long) Port Improvement	New		4.3	4.3	A
	W12	Ca Mau Port Improvement	New		2.9	2.9	A
	W14	Cao Lanh (Dong Thap) Port Improvement	New		6.4	6.4	A
	W16	My Thoi (Long Xuyen) Port Improvement	New		6.2	6.2	A
	W18	Passenger Terminal Development	New		2.2	2.2	A
	W20	Other Local Port Development	New		47.7	47.7	A
	Waterway Improvement						
	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	New		13.9	13.9	A
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	New		19.9	19.9	A
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	New		6.0	6.0	A
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	New		74.0	74.0	A
	W29	HCM-Can Tho Waterway Improvement	Partly Ongoing	WB/GOV	23.2	23.2	A
	W30	Can Tho-Ca Mau Waterway Improvement	Partly Ongoing	WB/GOV	17.6	17.6	A
	W31	Cho-Lach-Kien Luong Waterway Improvement	Partly Ongoing	WB/GOV	25.5	25.5	A
	W32	Saigon-Dong Thap Muoi-Long Xuyen Waterway Improvement	Partly Ongoing	GOV	5.4	5.4	A
	W33	Thi Vai-Nuoc Man Canal Development	New		3.2	3.2	A
	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	New		2.1	2.1	B
	W36	Cuu Long-Cambodia Waterway Improvement	New		20.5	20.5	B
	W37	Island Service Improvement (Co To and Cat Ba Islands)	New		2.5	2.5	B
	Operation & Safety						
	W39	IWT Safety Enhancement	New		52.7	52.7	A
	W41	IWT Education	Ongoing (1997-2002)	CIDA	14.1	14.1	A
		Subtotal			**385.3**	**385.3**	
Port & Ship-ping	***Port Expansion/Development***						
	P01	Cai Lan Port Expansion Project	Partly Ongoing (96-01)	JBIC	128.1	128.1	A
	P03	Hai Phong General Port (Phase II)	Ongoing (2000-2010)	JBIC	138.0	138.0	A
	P05	Cua Lo Port Project	New		49.3	49.3	A
	P07	Danang Bay - Lien Chieu Port Development	New		158.0	158.0	B
	P09	Danang Bay - Tien Sa Port Rehabilitation	Partly Ongoing (1999-2003)	JBIC	172.0	172.0	A

1/ “A” refers to projects for implementation before 2005, while “B”, after 2005.

Cont. Table 6.1

Sector	Project No.	Project	Status (original Schedule)	Fund Source	Project Cost (million US$)		Priority[1/]
					Total	2001-	
	P10	Specialized Port for Dung Quat Industrial Zone	New		130.0	130.0	A
	P12	Qui Nhon Port Development	New		36.0	36.0	A
	P14	Nha Trang Port Development	New		57.0	57.0	A
	P16	Ho Chi Minh City General Port	New		200.0	200.0	A
	P18	Ba Ria Vung Tau General Port	New		206.0	206.0	A
	P20	Can Tho Port Development	New		64.0	64.0	A
	P22	Industrial Port Development	New		67.0	67.0	A
	P24	Other Local Ports	New		22.7	22.7	A
	Operation & Safety						
	P26	Port EDI System at Gateway Ports	New		10.0	10.0	B
	P27	Large-scale ICD Development Project	New		72.2	72.2	B
	P31	Development of Aids to Navigation (ATN)	New		63.6	63.6	A
	P33	Maritime SAR and Oil Spill Protection	New		52.8	52.8	A
	P35	Seafarers' Education Upgrading Project	New		20.9	20.9	A
		Subtotal			**1,647.6**	**1,647.6**	
Air	***Airport Expansion/Development***						
	A01	Noi Bai International Airport Development Project	Ongoing (1996-2002)	GOV	57.1	17.1	A
	A02	New Passenger Terminal Building (T1) Construction in Noi Bai International Airport	Ongoing (1995-2001)	GOV & Credit Loans	80.0	24.0	A
	A03	Noi Bai Airport Development Project - Phase 1	New		53.9	53.9	A
	A05	Danang International Airport Development Project - Phase 1	New		77.7	77.7	A
	A07	Expansion of International Passenger Terminal Building in Tan Son Nhat International Airport	Ongoing (1999-2002)	SAA	12.0	6.0	A
	A08	Airfield Pavement Overlay in Tan Son Nhat International Airport	Ongoing (1999-2001)	SAA	16.0	14.4	A
	A09	Tan Son Nhat International Airport Development Project	New		226.7	226.7	A
	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	New		85.6	85.6	A
	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	New		83.6	83.6	B
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	New		120.8	120.8	A
	Air Traffic Control						
	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	New		58.0	58.0	A
	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	New		4.5	4.5	B
	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	New		1.3	1.3	B
	A19	Communication and Navigational Equipment Replacement Program	New		12.2	12.2	A
	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	New		32.8	32.8	A
	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	New		10.9	10.9	B
	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	New		2.5	2.5	A
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	New		3.0	3.0	A
	A24	Flight Calibration of Navigation Aids	New		1.1	1.1	A
	A25	Test Equipment Replacement and the Equipment Standards Laboratory	New		1.9	1.9	A
		Subtotal			**941.6**	**838.0**	
		Total			**12,503.0**	**11,529.8**	

1/ "A" refers to projects for implementation before 2005, while "B", after 2005.

Figure 6.1-a
Master Plan Projects up to 2010 (Infrastructure Projects Only), North

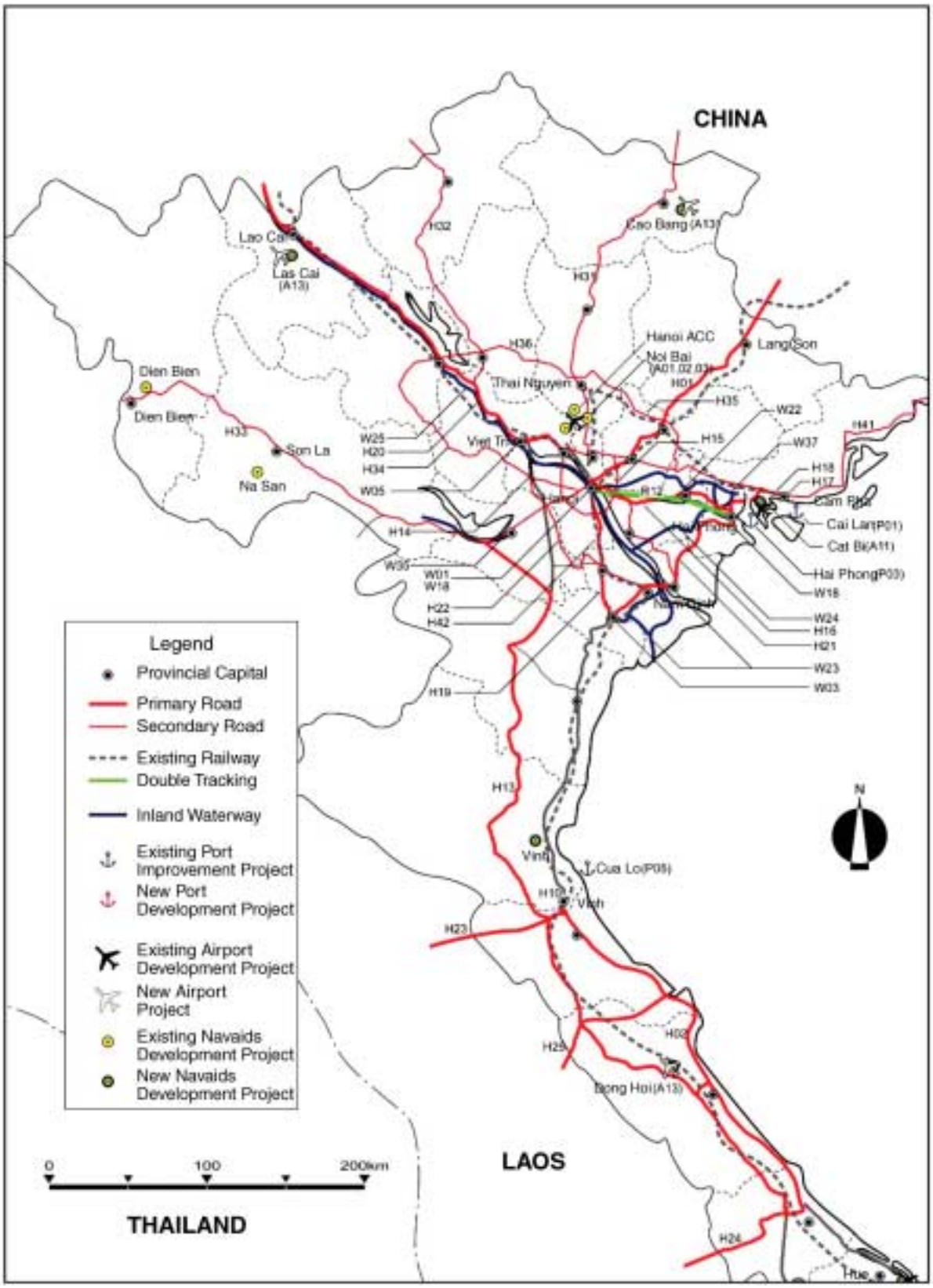


Figure 6.1-b
Master Plan Projects up to 2010 (Infrastructure Projects Only), Central Vietnam

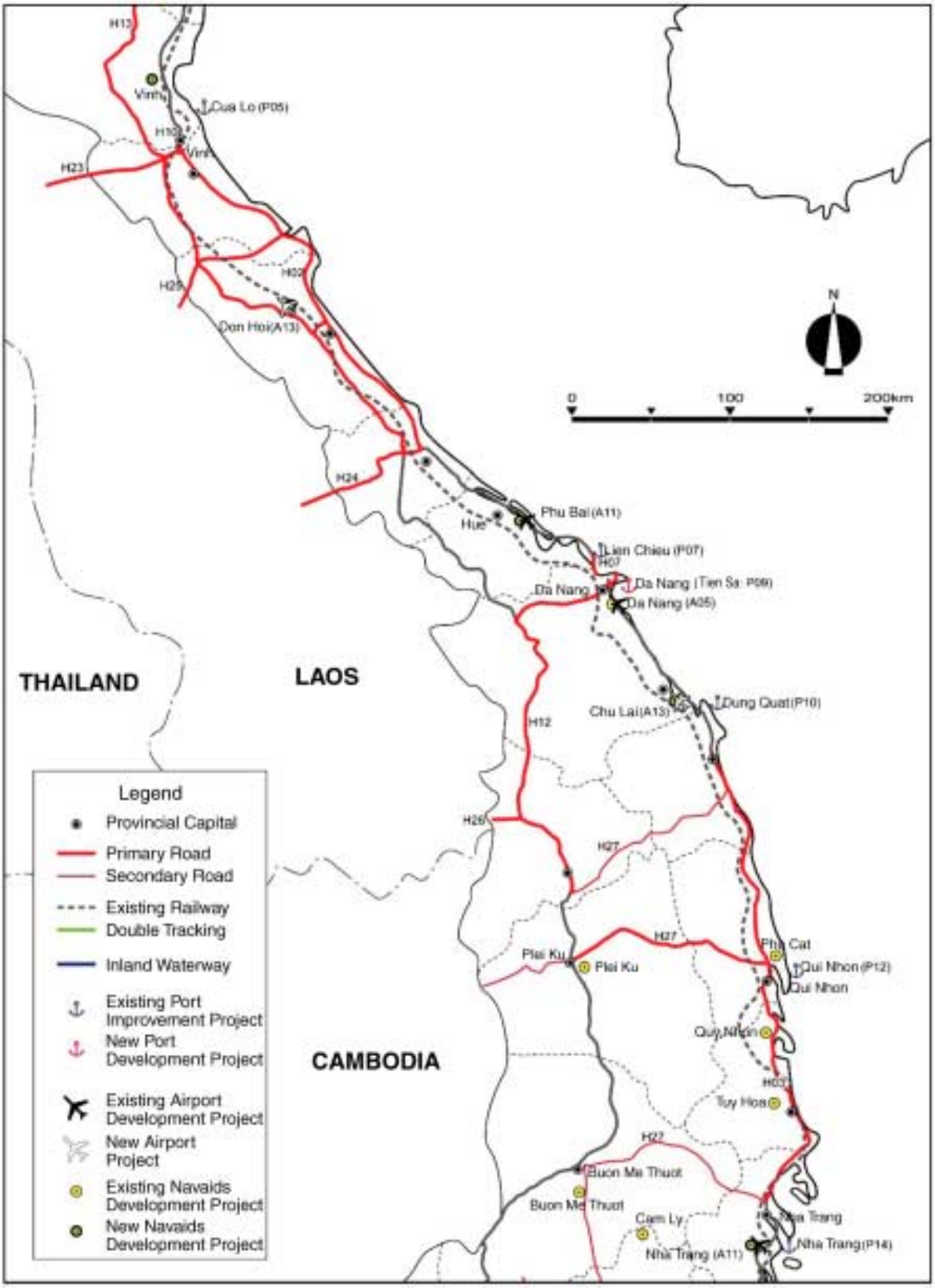


Figure 6.1-c
Master Plan Projects up to 2010 (Infrastructure Projects Only), South

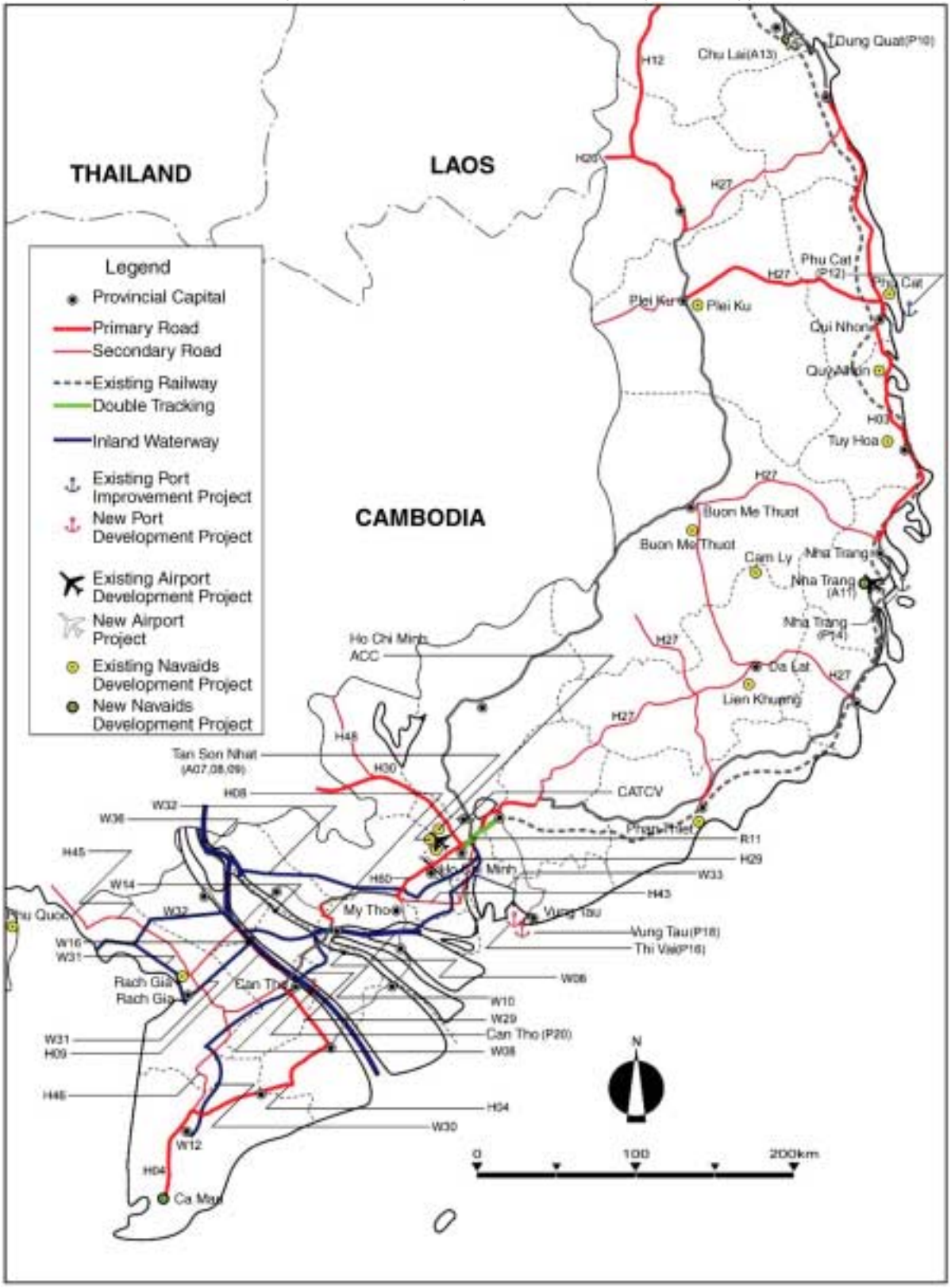


Table 6.2
Investment Requirement for the Transport Sector up to 2010

Sector	Category	Estimated Capital Cost (US$ mil)		Cost to Government		
		Total	Ongoing	Share % in Capital Cost	US$ Mil.	% to Total
Road	• Primary Road Network Development	4,413.9	3,577.9	100	4,414	41.9
	• Secondary Road Network Development	2,338.0	-	100	2,338	22.2
	• Road Safety	30.0	-	100	30	0.3
	• Expressway	350.0	-	20	70	0.7
	Subtotal	7,131.9	3,577.9	-	6,852	65.1
Railway	• Rehabilitation and Minor Improvement	910.0	47.0	100	910	8.6
	• Capacity Expansion of Critical Sections	481.0	-	100	481	4.6
	• Operation	136.0	-	0	0	0.0
	Subtotal	1,527.0	47.0	-	1,391	13.2
Inland Waterway	• Port Improvement	104.7	20.5	90	94	0.9
	• Waterway Improvement	213.8	71.7	100	214	2.0
	• Safety	66.8	14.1	100	67	0.6
	Subtotal	385.3	106.3	-	375	3.6
Port & Shipping	• Port Expansion/Development	1,428.1	438.1	70	990	9.4
	• Safety	219.5	-	100	220	2.1
	Subtotal	1,647.6	438.1	-	1,209	11.5
Air	• Airport Expansion/Development	709.8	61.5	80	568	5.4
	• Air Traffic Control	128.2	-	100	128	1.2
	Subtotal	838.0	61.5	-	696	6.6
Total		11,529.8	4,230.8	-	10,523	100.0

Source: VITRANSS

Table 6.3
Transport Equipment Costs for the Master Plan Period

Sector	Type	Cost	
		US$ mil	%
Road	Car, utility vehicle, truck, bus, motorcycle	32,200	84.8
Railway	Diesel/electric locomotive, passenger cars, wagons	1,882	5.0
Inland Waterway	Cargo and passenger ships	192	0.5
Shipping	Ocean-going vessels, coastal ships	1,407	3.7
Air	Various aircraft	2,289	6.0
Total		37,970	100.0

1/ Including ongoing projects worth US$ 500 million, of which US$ 400 million is included in the Master Plan period.

Overall Evaluation by Subsector: An economic evaluation was conducted on the projects included in the Master Plan by subsector on several assumptions.[28] The results indicate that: If all the Master Plan projects are implemented, the overall EIRR is calculated at 22%; The road subsector registers an average of 25% EIRR. However, if ongoing and committed projects are excluded, the average EIRR reduces to 12%. This implies that the future investments in roads should undergo critical economic evaluation. The railway subsector shows a sound level of EIRR on condition that the system can be operated and managed efficiently. Port and coastal shipping, including inland waterway transport, show a significant economic return, clearly indicating that this subsector will become critical in meeting the future demand (see Table 6.4).

Table 6.4
Economic Evaluation of Master Plan Projects by Subsector

Subsector		Cost	Benefit (US$ mil)		EIRR (%)	NPV[1/] (US$ mil)
			2010	2020		
Road	All Projects	7,113	2,278	5,357	24.7	7,191
	Excluding committed and ongoing projects	3,028	437	640	12.1	22
Railway		979	276	687	22.1	808
Port/Coastal Shipping		1,411	1,107	4,337	43.3	5,789
3 Subsectors[2/]		9,503	2,563	7,266	21.8	7,227

1/ Discounted by 12 p.a.
2/ Including committed and ongoing projects

Investment Requirement vs. Fund Availability

The possible investment amount for the Master Plan period (2001-2010) was estimated at US$ 11.7-12.6 billion[29], assuming a 2.5% allocation of GDP to the transport sector.

The total investment requirements of the transport sector include maintenance/minor projects and urban and rural transport which amount to US$ 5.9 billion and are outside of the VITRANSS but are definitely needed and given high priority by the government.[30] Thus, available funds for the VITRANSS is US$ 5.8 to 6.7 billion, of which US$ 3.0 billion is for ongoing/committed projects and only US$ 2.8 to 3.7 billion is available for new projects (see Table 6.5).

On the other hand, the selected new projects for the Master Plan require a total of US$ 6.1 billion, and US$ 3.9 billion is needed for the disbursement during the

28 Key assumptions include 2005 as the starting year, project life of 30 years, and SCF of 80%.
29 The range of the amount is due to the difference in the assumed GDP growth rate.
30 Urban and rural transport sectors have not been covered by the VITRANSS. Since strategies on rural transport sector are being developed by the World Bank with the support of the DFID of UK, they need to be further incorporated in the Master Plan.

Master Plan period. This indicates that the proposed investment size needs to be reduced, otherwise implementation will be a little delayed.

Table 6.5
Investment Requirements vs. Fund Availability

		US$ billion
• Investment Requirement for the Master Plan Period (2001-2010)		
1) Maintenance/Minor Projects not covered by the VITRANSS		2.4
2) Urban Transport[1/]		2.5
3) Rural Transport[2/]		1.0
	Subtotal	5.9
4) VITRANSS Project		
(1) Ongoing/Committed Projects		3.0
(2) New Projects		6.1 (3.9)[3/]
	Subtotal	9.1 (6.9)[3/]
	Total	15.0 (12.8)[3/]
• Possible Available Fund (Low – High Case)		11.7 – 12.6

1/ At present, there are no definite strategy and investment program for urban transport.
2/ The amount needs to be adjusted based on the strategy which is being developed by the government.
3/ The amount to be disbursed during the Master Plan period.

Selection of Core Projects

For this reason, a total of 50 core projects (projects under priority A in Table 6.1) which cost US$ 4.1 billion have been selected. In order to expand implementation beyond these core projects, it is necessary either to improve cost recovery of the projects or increase the overall financial allocation to the transport sector.

7 SHORT-TERM PLAN

Objective

This chapter sets out the short-term investment priorities for public investment, based on the evaluation of projects included in the master plan. Suggested investment priorities are given for each mode, together with the main supporting policy measures and institutional changes that are required to achieve the master plan objectives. Further details of the required policy and institutional changes are given in Chapter 8, together with proposed technical assistance projects that would help to implement the short-term plan successfully.

Subsector Priorities in the Short-term

Road: For road transport to play its expected role in carrying increased traffic at minimum cost, increasing accessibility and level of service with minimum adverse impacts such as accidents, the main short-term investment priorities are (a) completing the current rehabilitation program of the primary/secondary road network, to provide the basic network of strategic links for efficient operation of modern motor vehicles, and (b) implementing the tertiary road improvement project to provide rural access. This calls for completion of the many primary/secondary road projects already underway or committed and, where finance permits, the start of new projects which tackle expected short-term bottlenecks (mainly cross-river sections and roads around metropolitan areas such as Hanoi and HCMC) or which develop the strategic north-south and east west corridors (both of which are important from the government's policy viewpoint). See Figure 7.1 for details of these projects.

In support of these investments, to increase efficiency, safety and level of service, whilst minimizing infrastructure costs, important short-term policy measures are required to be taken in three key areas:

(a) increasing efficiency of road transport services, through providing a legal basis for the competitive environment for road transport services and an accelerated equitization program for bus and truck enterprises,
(b) improving safety, through strengthening the road safety program and the way that regulations are enforced (supported by investments included in the short-term plan),
(c) establishing a sustainable road management (especially maintenance) and financing system, through institutional strengthening of subsector agencies, better road contracting systems, and better methods of road funding based on user charges.

Railway: If operating efficiency and level of service can be increased, the railway could play a much greater role in future. However in practice this is likely to be constrained in the short-term by the institutional capacity of the railway. Infrastructural bottlenecks are to be found everywhere because most of the track,

bridges, rolling stock and other equipment is obsolete. The priority for investment is therefore to intervene in the most crucial areas required to sustain the capacity of the railway, in order to continue safe and stable operations. This would enable the railway to carry traffic levels similar to those handled at present, while institutional reforms are carried out. This calls for substantial increased infrastructure investment in rehabilitation of track, bridges and signaling equipment along the main strategic routes. Further investment to expand capacity should only be considered if this is certain to increase the financial viability of the railway. Virtually all of these investments would be through new projects.

Meanwhile the vital policy and institutional reforms required to establish the railway as a commercially and economically viable organization are three-fold:

(a) establishing the railway as a corporation, organized in a lines-of-business way with new management systems, to enable a more customer-oriented approach to management,
(b) placing the relationship between government and the railway on a proper commercial basis (except for regulatory aspects), with a performance agreement that encourages efficiency and value for money,
(c) preparing a realistic business plan that the railway can begin implementing in the short-term to improve efficiency of carrying existing traffic and attract potential new traffic in the long-term.

Inland Water: Although future potential growth in demand is not large, much can be done to improve efficiency and reduce costs. The priority short-term investments are aimed at securing navigational safety and stability along the main waterways. These include improvements to ports and inland waterways to enable more efficient vessel utilization and cargo handling and use of larger vessels. Other investments focus on navigational safety (especially to enable safe nighttime navigation) and training of water transport staff. Most of these investments would involve new projects.

To support this investment program, policy measures are required in the following three key areas, to increase efficiency, safety and level of service and minimize infrastructure costs:

(a) increasing competition, efficiency and service levels in water transport services, through equitizing water transport SOEs and establishing a regulatory framework with minimum entry barriers (subject to minimum safety standards),
(b) establishing a sustainable water management and financing capability (especially for dredging and other maintenance) to ensure that the improved facilities offer the planned service and safety level (requiring a clear definition of responsibilities between inland water and maritime sector management, and implementation of the current inland water institutional strengthening project and education programs),
(c) reforming the ports to place overall responsibility with local government, while enabling more competition and efficiency in management (through

management contracts and leasing arrangements), in order to remove bottlenecks to operational efficiency.

Maritime: As roads are improved, ports are revealed to be major bottlenecks in the entire transport system - these need to be improved in terms of service and accessibility. In particular, to increase efficiency, safety and level of service of shipping services it is vital to tackle these bottlenecks, by increasing productivity/throughput and promoting use of more modern and efficient vessels. Infrastructure improvements are urgently required in the three gateway ports which are so vital to Vietnam's international trade. However investment is also required in other major local ports, in industrial ports, and along main access channels and busy sea lanes. Investment is also required in safety-related activities in order for Vietnam to meet its international obligations. The short-term investment priority is therefore to support efforts at achieving maximum increase in productivity per unit of investment at the key strategic ports, and improving maritime safety (seafarer's education, navigational aid facilities etc.). See Figure 7.1 for more details.

Supporting short-term policy and institutional measures cover the supply of shipping and port services and the way that the subsector is managed, in order to increase efficiency, safety and level of service, while minimizing infrastructure costs:

(a) improving port efficiency and level of service, through implementing pilot projects in commercialization (establishing ports as independent entities with local involvement in planning and control, with increased autonomy to set charges, providing management and handling services under contract, and leasing facilities to private terminal operators to attract private investment and management know-how),
(b) promoting competition in coastal shipping services, through giving increased autonomy to ship operators under the VINALINES group (allowing VINALINES to concentrate on its important function of developing the Vietnamese ocean-shipping industry) and making a start on equitizing coastal shipping operators,
(c) improving the way the maritime sector is planned and regulated, through making a clear division of responsibilities between inland water and maritime subsectors; raising ship inspection and other regulatory standards as required to meet international obligations; improving VINAMARINE capacity to make infrastructure plans based on shippers needs, taking account of national priorities and environmental considerations; and improving the business environment for private and foreign investment.

Aviation: To meet continued high traffic growth, while raising technical/safety standards, is a major challenge in both international and domestic markets. Careful planning is required to minimize investment requirements. In parallel to strengthening the three gateway airports and implementing improvements required under international commitments (especially the new air traffic management system), the overall air network needs strengthening through carefully targeted improvements at other major local airports. Precise short-term priorities are difficult

to define with available information. The short-term investment plan therefore gives priority to completing current projects and to implementing those new projects required under international agreements or those new projects with high expected returns (for example at the major airports). This allows more marginal projects to be reviewed using better planning data over the next five years before decisions to implement them are taken. See Figure 7.1 for details of these projects.

To support the short-term aviation plan, policy and institutional measures are required in the following areas, to increase efficiency, level of service and safety, while minimizing infrastructure costs:

(a) raising technical standards to those required under international agreements, by implementing the recommendations of the recent legal reform study,
(b) increasing efficiency of the Vietnamese aviation industry, by fostering competition (between airlines and between support organizations), removing unnecessary regulatory constraints (such as fares controls), and basing infrastructure charges more closely on costs,
(c) improving management capacity in the subsector by separating regulatory and commercial activities (in preparation, in the long-term, for the airports to be established as independent commercial units) and adopting modern planning and evaluation methods (to allow future investments to be planned more effectively).

Transport Sector Management Aspects: Further policy and institutional measures are required to implement the short-term plan effectively, covering the following aspects:

(a) coordinating the many regulatory reforms proposed for each mode to ensure that a consistent approach is followed,
(b) institutional strengthening of the MOT and its subsector agencies, at central and local levels, to develop and implement transport policies,
(c) seeking support at government level for tackling the financing problems encountered for all modes of transport,
(d) implementing the far-reaching government programs for equitization in the transport sector.

These measures are highlighted in the policy and institutional reforms described in Chapter 8 (which also deals with other aspects common to more than one mode, such as multimodal transport, rural transport development and cross-border transport, all of which require policy action in the short-term).

Short-term Projects and Plan

Core projects have been selected for short-term projects which are composed of ongoing/committed projects and new projects.[31] Of the total cost to government at US$ 7.3 billion, US$ 4.2 billion is for ongoing/committed projects. The road

[31] See Figure 7.1 for the assumed implementation schedule of the projects.

subsector accounts for US$ 4.8 billion (including ongoing/committed projects) or 65% of the total cost to government. However, 75% of this cost is for ongoing/committed projects, leaving only US$ 1.2 billion for new ones. Port and shipping subsector requires US$ 1.03 billion (14.0%), air subsector, US$ 0.61 billion (8.4%), railway subsector, US$ 0.55 billion (7.5%), and inland waterway subsector, US$ 0.35 billion (4.7%) (see Table 7.1).

Available funds during the period of 2001-2005 are about US$ 5 billion, whereas the investment requirements for maintenance/minor projects, urban and rural transport, and ongoing/committed projects amount to US$ 5.8 billion, which exceeds the available funds (see Table 7.2). This makes it difficult for government to undertake big, new projects, unless new fund sources are found or policy priority to the transport sector is determined.

Since the investment requirements of the core projects more or less tally with the fund availability during the Master Plan period, it is assumed that the core projects would be started during the first five years. Approximately US$ 0.6 billion out of the total US$ 2.4 billion of the new projects will be disbursed in 2001-2005 period.

Table 7.1
Investment Requirement for the Transport Sector up to 2005

Sector	Category	Estimated Capital Cost (US$ mil)		Cost to Government		
		Total	Ongoing	% to Capital	US$ Mil.	% to total
Road	• Primary Road Network Development	4,102[1/]	3,578[1/]	100	4,102[1/]	56.0
	• Secondary Road Network Development	663	-	100	663	9.0
	• Road Safety	30	-	100	30	0.4
	Subtotal	4,795	3,578		4,795	65.4
Railway	• Rehabilitation and Minor Improvement	521	47	100	521	7.1
	• Capacity Expansion of Critical Sections	26	-	100	26	0.4
	• Operation	136	-	0	0	0.0
	Subtotal	683	47		547	7.5
Inland Waterway	• Port Improvement	101	21	90	91	1.2
	• Waterway Improvement	189	72	100	189	2.6
	• Operation & Safety	67	14	100	67	0.9
	Subtotal	357	107		347	4.7
Port & Shipping	• Port Expansion/Development	1,270	438	70	889	12.1
	• Operation & Safety	137	-	100	137	1.9
	Subtotal	1,407	438		1,026	14.0
Air	• Airport Expansion/Development	626	62	80	501	6.8
	• Air Traffic Control	112	-	100	112	1.5
	Subtotal	738	62		612	8.4
Total		7,980	4,232		7,327	100.0

1/ Including US$ 1.5 billion for urban road projects. Excluding investment outside the public investment envelope (public or private investment made through commercial funding means, mainly for transport equipment).

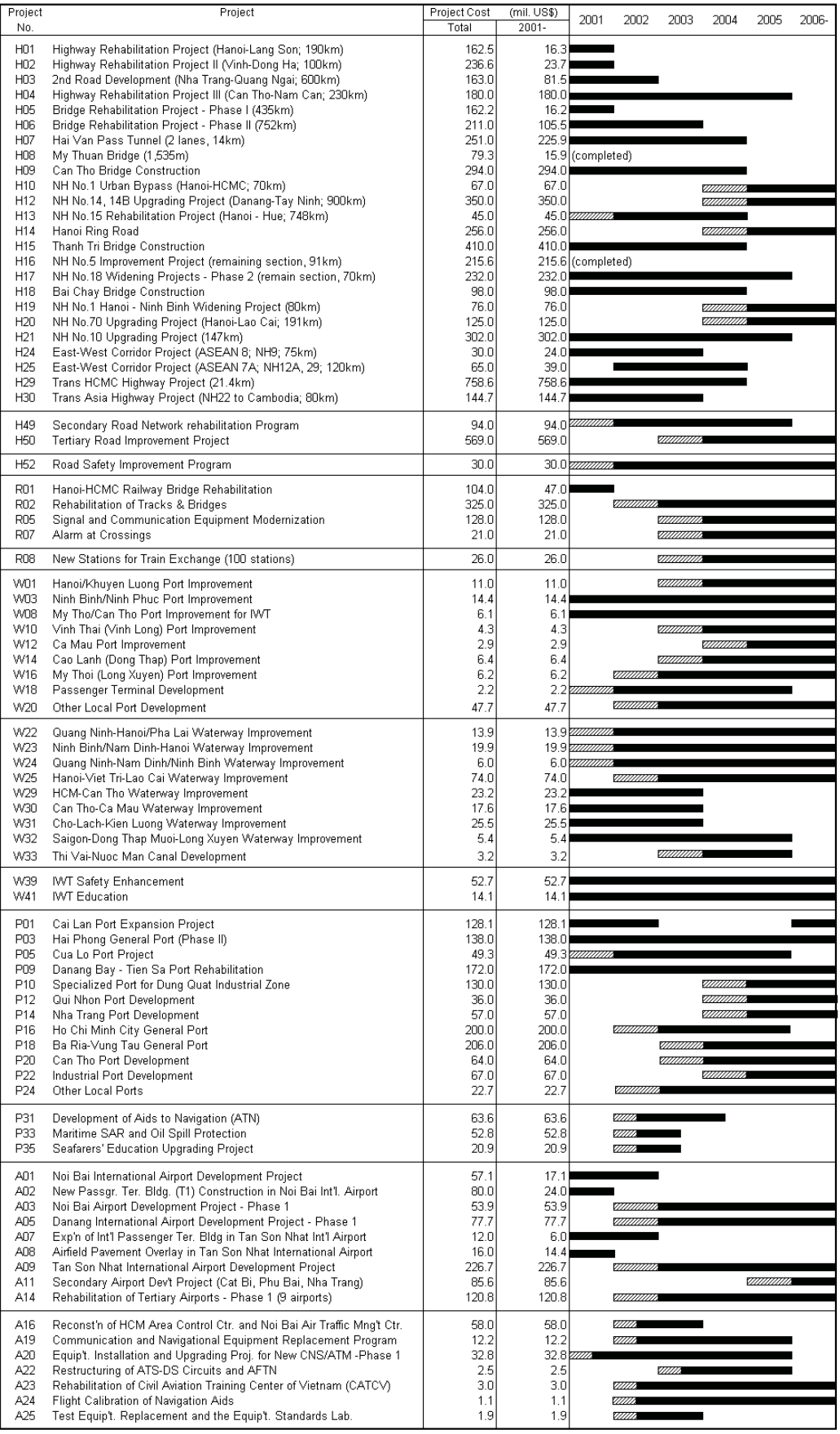
Table 7.2
Investment Requirements vs. Fund Availability During 2001-2005

		US$ billion
• Investment Requirement for the Master Plan Period (2001-2005)		
1) Maintenance/Minor Projects not covered by the VITRANSS		1.0
2) Urban Transport[1/]		1.5
3) Rural Transport[2/]		0.4
	Subtotal	2.9
4) VITRANSS Project		
(1) Ongoing/Committed Projects		2.9
(2) New Projects		0.6
	Subtotal	3.5
	Total	6.4
• Possible Available Fund (Low – High Case)		4.9 – 5.1

1/ At present, there are no definite strategy and investment program for urban transport.
2/ The amount needs to be adjusted based on the strategy which is being developed by the government.

Figure 7.1
Implementation Schedule of Short-term Projects

Sector	Project No.	Project	Project Cost (mil. US$) Total	2001-
Road	H01	Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	162.5	16.3
Primary Network Development	H02	Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	236.6	23.7
	H03	2nd Road Development (Nha Trang-Quang Ngai; 600km)	163.0	81.5
	H04	Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	180.0	180.0
	H05	Bridge Rehabilitation Project - Phase I (435km)	162.2	16.2
	H06	Bridge Rehabilitation Project - Phase II (752km)	211.0	105.5
	H07	Hai Van Pass Tunnel (2 lanes, 14km)	251.0	225.9
	H08	My Thuan Bridge (1,535m)	79.3	15.9 (completed)
	H09	Can Tho Bridge Construction	294.0	294.0
	H10	NH No.1 Urban Bypass (Hanoi-HCMC; 70km)	67.0	67.0
	H12	NH No.14, 14B Upgrading Project (Danang-Tay Ninh; 900km)	350.0	350.0
	H13	NH No.15 Rehabilitation Project (Hanoi - Hue; 748km)	45.0	45.0
	H14	Hanoi Ring Road	256.0	256.0
	H15	Thanh Tri Bridge Construction	410.0	410.0
	H16	NH No.5 Improvement Project (remaining section, 91km)	215.6	215.6 (completed)
	H17	NH No.18 Widening Projects - Phase 2 (remain section, 70km)	232.0	232.0
	H18	Bai Chay Bridge Construction	98.0	98.0
	H19	NH No.1 Hanoi - Ninh Binh Widening Project (80km)	76.0	76.0
	H20	NH No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	125.0	125.0
	H21	NH No.10 Upgrading Project (147km)	302.0	302.0
	H24	East-West Corridor Project (ASEAN 8; NH9; 75km)	30.0	24.0
	H25	East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)	65.0	39.0
	H29	Trans HCMC Highway Project (21.4km)	758.6	758.6
	H30	Trans Asia Highway Project (NH22 to Cambodia; 80km)	144.7	144.7
Secondary Network Dev't.	H49	Secondary Road Network rehabilitation Program	94.0	94.0
	H50	Tertiary Road Improvement Project	569.0	569.0
Road Safety	H52	Road Safety Improvement Program	30.0	30.0
Railway	R01	Hanoi-HCMC Railway Bridge Rehabilitation	104.0	47.0
Rehabilitation and Minor Improvement	R02	Rehabilitation of Tracks & Bridges	325.0	325.0
	R05	Signal and Communication Equipment Modernization	128.0	128.0
	R07	Alarm at Crossings	21.0	21.0
Cap. Expans'n.	R08	New Stations for Train Exchange (100 stations)	26.0	26.0
Inland Water	W01	Hanoi/Khuyen Luong Port Improvement	11.0	11.0
Port Improvement	W03	Ninh Binh/Ninh Phuc Port Improvement	14.4	14.4
	W08	My Tho/Can Tho Port Improvement for IWT	6.1	6.1
	W10	Vinh Thai (Vinh Long) Port Improvement	4.3	4.3
	W12	Ca Mau Port Improvement	2.9	2.9
	W14	Cao Lanh (Dong Thap) Port Improvement	6.4	6.4
	W16	My Thoi (Long Xuyen) Port Improvement	6.2	6.2
	W18	Passenger Terminal Development	2.2	2.2
	W20	Other Local Port Development	47.7	47.7
Water Improvement	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	13.9	13.9
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	19.9	19.9
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	6.0	6.0
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	74.0	74.0
	W29	HCM-Can Tho Waterway Improvement	23.2	23.2
	W30	Can Tho-Ca Mau Waterway Improvement	17.6	17.6
	W31	Cho-Lach-Kien Luong Waterway Improvement	25.5	25.5
	W32	Saigon-Dong Thap Muoi-Long Xuyen Waterway Improvement	5.4	5.4
	W33	Thi Vai-Nuoc Man Canal Development	3.2	3.2
Safety	W39	IWT Safety Enhancement	52.7	52.7
	W41	IWT Education	14.1	14.1
Port & Shipping	P01	Cai Lan Port Expansion Project	128.1	128.1
Port Expansion / Development	P03	Hai Phong General Port (Phase II)	138.0	138.0
	P05	Cua Lo Port Project	49.3	49.3
	P09	Danang Bay - Tien Sa Port Rehabilitation	172.0	172.0
	P10	Specialized Port for Dung Quat Industrial Zone	130.0	130.0
	P12	Qui Nhon Port Development	36.0	36.0
	P14	Nha Trang Port Development	57.0	57.0
	P16	Ho Chi Minh City General Port	200.0	200.0
	P18	Ba Ria-Vung Tau General Port	206.0	206.0
	P20	Can Tho Port Development	64.0	64.0
	P22	Industrial Port Development	67.0	67.0
	P24	Other Local Ports	22.7	22.7
Safety and Environmental Protection	P31	Development of Aids to Navigation (ATN)	63.6	63.6
	P33	Maritime SAR and Oil Spill Protection	52.8	52.8
	P35	Seafarers' Education Upgrading Project	20.9	20.9
Air	A01	Noi Bai International Airport Development Project	57.1	17.1
Airport Expansion / Development	A02	New Passgr. Ter. Bldg. (T1) Construction in Noi Bai Int'l. Airport	80.0	24.0
	A03	Noi Bai Airport Development Project - Phase 1	53.9	53.9
	A05	Danang International Airport Development Project - Phase 1	77.7	77.7
	A07	Exp'n of Int'l Passenger Ter. Bldg in Tan Son Nhat Int'l Airport	12.0	6.0
	A08	Airfield Pavement Overlay in Tan Son Nhat International Airport	16.0	14.4
	A09	Tan Son Nhat International Airport Development Project	226.7	226.7
	A11	Secondary Airport Dev't Project (Cat Bi, Phu Bai, Nha Trang)	85.6	85.6
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	120.8	120.8
Air Traffic Control	A16	Reconst'n of HCM Area Control Ctr. and Noi Bai Air Traffic Mng't Ctr.	58.0	58.0
	A19	Communication and Navigational Equipment Replacement Program	12.2	12.2
	A20	Equip't. Installation and Upgrading Proj. for New CNS/ATM -Phase 1	32.8	32.8
	A22	Restructuring of ATS-DS Circuits and AFTN	2.5	2.5
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	3.0	3.0
	A24	Flight Calibration of Navigation Aids	1.1	1.1
	A25	Test Equip't. Replacement and the Equip't. Standards Lab.	1.9	1.9



Legend : F/S
: Implementation

8 POLICY PRIORITIES AND INSTITUTIONAL IMPROVEMENT TO SUPPORT THE MASTER PLAN

As described in the previous chapter, a wide range of policy actions are required for each transport mode to support the implementation of the short-term plan: (a) to increase efficiency, safety and level of transport service, and (b) to provide the planned infrastructure cost-effectively with adequate funds.

However effective implementation of the master plan requires policy-making to be based not just on the viewpoints of each mode but rather based on a view of the transport sector as a whole. This, in turn, requires effective transport sector policies in each of the following areas:

- Provision of a regulatory framework and enforcement mechanism to ensure efficient, competitive transport services, so that the proposed infrastructure investments achieve the intended benefits without excessive external costs such as accidents and adverse environmental impacts,
- Development of effective planning capability, to achieve objectives effectively at reasonable cost,
- Development of adequate construction services, to provide the required standards of infrastructure with minimum cost,
- Establishment of an adequate infrastructure maintenance capability, so that the improved infrastructure provides the expected improved transport conditions over the full planned lifetime,
- Provision of financial mechanisms for development, maintenance and overall management of the infrastructure, to provide sustainability, and
- Strengthening of sector management to coordinate reform and implement policies and projects.

This chapter summarizes the policy-making requirements in each of these areas and then indicates the implications for implementation and need for technical assistance.

Provision of a Regulatory Framework and Enforcement Mechanism to Ensure Efficient, Competitive Transport Services

The long-term strategy for establishing the competitive environment for transport services involves three aspects - (a) a regulatory framework that meets minimum safety /environmental standards and fosters competition, (b) economically efficient pricing and cost recovery measures, and (c) equitization/commercialization of SOEs. The short-term actions required are set out below.

Regulatory Framework: Implementing the regulatory framework for transport involves:

- setting clear, minimum technical standards (justifiable on safety and environmental grounds), especially for road, inland water, railway and multimodal transport that currently have no proper legal framework,
- development of effective safety/environmental programs to increase enforcement and achievement of those minimum standards, and to minimize adverse impacts of transport, especially for road, maritime and aviation transport which involve serious safety and environmental issues, and
- minimizing barriers to competition in order to promote efficiency, by consolidating the recent reduction in transport licensing restrictions and maintaining safety/environmental standards through stricter licensing of drivers/captains/seafarers and vehicles/vessels.

Pricing and cost recovery policies: Competitive conditions can be enhanced in the short-term by implementing those policies that can, in practice, remove major distortive impacts on competition (for example remaining price controls and inadequate cost recovery from road users), and agreeing specific objectives for implementing other policies and working out the next steps to be taken.

The recommendations include the phasing out of remaining general fares and tariffs controls [32] and other distortions such as differential infrastructure charges for coastal and international shipping, introducing an axle load fee for road vehicles, and seeking the agreement of the MOT with the Ministry of Finance on the principles of charging for infrastructure provision.

Equitization and reform of transport SOEs: The equitization program needs to be accelerated through the MOT's current equitization project by defining a timetable for equitizing small-scale transport entities (especially the road transport and the smaller inland water and maritime transport enterprises) and implementing it. Monitoring the results will allow the equitization rules to be further developed and applied to large-scale equitization (for example, to shipping enterprises).

For SOEs not to be equitized in the short-term, the priority is to implement, sometimes on a pilot project basis, a range of commercialization or corporatization reforms so that these can increase efficiency of SOEs and identify practical reforms that can be applied more generally in the long-term (especially the railway, ports and shipping enterprises as mentioned in the previous chapter).

Development of Effective Planning Capability

Efficient planning is hindered by the lack of delegation of basic infrastructure management functions to the specialized MOT departments, which have inadequate capacity to act as state administrators for each mode of transport,

[32] If government wishes to keep tariffs below cost, replace these controls by specific subsidies awarded to transporters who can provide the service most efficiently (at minimum cost to government).

other than for particular purposes such as direct management of infrastructure maintenance.

The lack of a clearly defined, hierarchical transport network makes it difficult to handle investments and share administrative roles between the central and local governments. Defining the primary, secondary and tertiary network proposed in the VITRANSS should be further elaborated and institutionalized in terms of functional status, technical standard and specific management responsibility. In order to develop the network at tertiary level, capacity to make and evaluate plans by provincial and district authorities should be considerably strengthened.

At present, the database for network planning is extremely weak in Vietnam especially at provincial and local levels. The ad hoc approach through special studies like VITRANSS, is not a permanent solution. For sustainable planning and policy formulation in Vietnam's transport sector, an adequate institutional arrangement and system for database management is vital. One suggested approach would involve (a) coordinating data management between key transport agencies to consolidate their operation and management information, (b) conducting periodically (say, 3-5 years) national transport surveys for key aspects as undertaken by the VITRANSS, and (c) strengthening a unit in MOT/TDSI for transport database management. Database management at provincial levels needs to be strengthened in a similar way.

Development of Adequate Construction Services

To provide better quality infrastructure at minimum cost, short-term actions include raising technical standards and improving competition in the planning/design/construction business. To raise the quality of Vietnamese contractors and consultants in the short-term requires (1) stronger incentives for training (through higher qualification standards), and (2) investment in better equipment and construction systems. To improve competition in the construction, dredging and similar businesses, measures should be introduced such as (1) step-by-step equitization of SOEs, (2) clarification of procurement guidelines, (3) removal of restrictions on foreign construction companies bidding for foreign contracts, (4) removal of price controls, (5) encouragement of more contractors to enter the bidding process, and (6) stricter monitoring of procurement activities.

Establishing an Adequate Infrastructure Maintenance Capability

To ensure that the infrastructure improved under the master plan provides better transport conditions over the expected lifetime, high priority must be given to improving maintenance standards and systems in the short-term, both for primary/secondary infrastructure mainly under direct central government management, and for tertiary infrastructure mainly under local government management.

On the improvement of maintenance of primary and secondary infrastructure, a wide range of measures have been proposed in past studies and institutional strengthening projects in all subsectors to (1) increase standards of maintenance, (2) introduce modern infrastructure maintenance management systems, (3) strengthen the capacity of MOT specialized departments to manage maintenance, with new guidance documents and procedures, and training for personnel in new systems and procedures, (4) increase management incentives by extending the amount of maintenance carried out under competitive contract, and (5) increase management incentives in internal maintenance units by giving them greater autonomy but making them more accountable for services offered.

Relatively little improvement has taken place in maintenance of tertiary infrastructure so this deserves close attention in the next five years. However sustainable progress cannot be achieved until the basic networks and facilities, and their technical standards, have been defined, and responsibilities for maintenance been clarified. Improvements in maintenance are generally required in all areas, often involving the replacement of existing ad hoc arrangements with completely new systems and working arrangements, including (1) definition of technical standards, (2) linking maintenance planning and financing to the planning of rehabilitation/upgrading/ new construction, (3) development of modern maintenance systems and maintenance programs adapted to suit needs at tertiary level, (4) capacity strengthening of provincial maintenance units, guided by the MOT agencies, and (5) where opportunities exist, conducting trials of various ways of delegating maintenance responsibilities to local organizations under contract.

Provision of Financial Mechanisms for Development, Maintenance and Management of Infrastructure

Implementing the master plan requires improved financing in the short-term, both for maintenance/management and for rehabilitation/upgrading/improvement/new construction of infrastructure.

Maintenance Financing: The first priority is to improve maintenance planning and management, so that available resources are allocated more effectively and the need for additional resources is minimized. However, even after making such improvements, current financial allocations would be completely inadequate to meet future needs, and better mechanisms are required to implement the planned maintenance programs. The possible improvements include (1) implementing radically new mechanisms such as the commercially managed fund proposed for roads, in which a board (including road user representatives) manages an off-budget fund derived from user charges (not earmarked taxes), (2) some other form of fund in which tax revenues from users are allocated by the Ministry of Finance for maintenance purposes and (3) a more straightforward maintenance budgeting system in which future needs are provided based on planned maintenance programs. At present, Vietnam has none of these. Allocations of funds are only

approximately based on simple norms (like cost per km of route) and control of financial effectiveness is impossible.

Any of the three types of improvement could be considered in Vietnam for each mode of transport. The commercially managed road fund is being actively considered in Vietnam. The road fund concept has many potential advantages for Vietnam such as (1) enabling finance for road maintenance to be raised with the active support of road users, and (2) improving efficiency and accountability. However until the practical problems with such an approach are sorted out, priority should be given to improving the budget system for each mode: (1) reviewing current budgetary procedures and need for improvement, (2) making any necessary changes to budgetary responsibilities and procedures, and (3) introducing improved systems for maintenance planning and costing, and for monitoring infrastructure condition.

A start has been made along such lines for roads. Similar improvements in maintenance planning are being made for inland waterways with a view to implement an improved system within five years, but work has yet to start on improving maritime maintenance planning (which is a priority area for improvement).

New Sources of Development Finance: Developing new sources of investment finance must be duly considered. Over the master plan period it is expected that decreased reliance can be placed on ODA funding of transport, and the government is actively considering new sources of investment finance which can be mobilized through a transport development fund, including a savings account that can raise local finance. New sources of finance are also required if the private sector is to invest in large-scale shipping. Improving the supply of local finance in the short-term could potentially help to promote much greater investment in transport because, according to the Ministry of Finance, many foreign investments cannot currently be disbursed because of lack of reliable supply of counterpart finance.

There is scope for attracting foreign investment finance for infrastructure through direct investments, Joint Ventures and BOT-type arrangements. However at present there is limited interest in making such investments. Nevertheless, to encourage increased foreign investment in the longer term, the following steps can be taken by the government, working together with MOT: (1) removal of obstacles to foreign investment such as restrictive laws on foreign businesses, controls on prices, use of foreign capital and repatriation of profits, (2) removing the transport sector from the list of sectors subject to special restrictions on foreign investment (especially considering that, in connection with modern logistics systems, transport is often considered as a mere link in the production process), (3) clarification of the conditions under which liabilities would be placed on government (for example development risks under BOT schemes) and the foreign investor (labor obligations), and (4) monitoring how Vietnamese banks offer credit to private

companies compared to SOEs, and where possible remove obstacles to supply of credit (both domestic and foreign).

Strengthening of Sector Management

The overall master plan strategy for sector management development involves enhancing management through decentralization, divesting of commercial functions and promoting human resources. To implement this strategy in the short-term, in conjunction with the wide-ranging reforms necessary for the transport sector, is a major challenge for the MOT in the following seven key areas:

Establishing the regulatory framework: Continued guidance is required from MOT to ensure that the drafting efforts at subsector level produce proposals that are consistent with government's overall transport policies and strategy, especially for (1) multimodal and international aspects, which cannot be handled adequately at subsector level, (2) ensuring that the recent removal of licence restrictions is consolidated into a regulatory regime with low entry barriers, and (3) helping to define the role of local authority in transport regulation.

The MOT should also seek agreement with the Ministry of Finance on the principles of charging for infrastructure and work with other ministries to phase out remaining tariff controls on (1) provincial bus routes, if any controls remain, (2) truck tariffs in mountainous areas, replacing these if required with subsidies for specific services offered, (3) movements of rice and fertilizer on the railway, (4) railway passenger tariffs (with two tier charging for foreigners and Vietnamese), (5) maritime and inland water port tariffs, (6) air transport tariffs (for both Vietnamese and foreigners), and (7) support services such as dredging and construction.

Strengthening planning and policy-making capacity of MOT: Planning and policy-making capacity of MOT is insufficient because there are not enough staff with the required experience in areas such as regulation, pricing, subsidy and cost recovery policy-making; project and policy evaluation; strategic planning; and monitoring of policy and project implementation. Furthermore, existing expertise is spread out in different general departments and in external institutes. Planning data is also difficult to obtain although the VITRANSS study has managed to assemble and develop this during the last year.

To strengthen MOT's capacity it is recommended that (1) an institutional reform plan is developed with the aim of strengthening MOT capacity in the core areas in planning and policy-making (perhaps by concentrating economics/planning expertise in one department), (2) strategic planning is improved through modern planning/evaluation methods and clear guidelines, so that investment priorities can be established on a rational basis and decision-making delegated to a lower level, allowing senior decision-makers to focus on overall policy and strategic matters, (3) the VITRANSS model should be developed to update the forecasts as and when better planning data become available, (4) regulatory and cost recovery

policies are developed using financial analysis tools, (5) systems are developed for monitoring policy implementation, and (6) an external agency, such as the TDSI, is appointed to maintain and develop the VITRANSS planning database.

Improve supply of reliable information to decision-makers and planners: The MOT considers that only 30% of the information it needs is actually available. Existing statistics reflect the requirements of the past rather than needs of future decision-makers under market conditions. Many important items such as numbers of vehicles, traffic flows, tariffs, and accidents are either completely lacking or cover only part of the sector. Generally the data are often unreliable.

To supply decision-makers with adequate information it is recommended that in the short term the MOT (1) coordinates a review of information needs by its agencies at all levels (central, provincial and district) and (2) identifies measures required to obtain the required information at least cost based on the review and an assessment of existing database systems.

Coordinate institutional change and promote decentralization: The MOT should help its agencies to strengthen policy implementation capacity in areas that (1) involve decisions that can only be taken at government level, (2) involve significant overlap between modes, or (3) require a common approach between modes.

This involves (1) renewing the ministry's commitment to delegating powers and responsibilities for infrastructure management to MOT's specialized departments, as part of the MOT's current review of responsibilities in the transport sector, (2) reviewing current procedures for implementing projects through PMUs to try to streamline administration and reduce delays, (3) taking a strong lead in improving the management of provincial and district transport infrastructure, (4) establishing a clearer legal basis for cooperation between ministries and PPCs, especially to deal with seemingly insurmountable difficulties that are sometimes experienced at local level (such as getting detailed vehicle registration data from the Ministry of Police), and (5) initiating liaison groups that involve transport users more fully in the MOT's work.

Coordinate human resource development: To foster long-term human resource development, the priority in the short-term is to start formulating comprehensive human resource development policies and strategies for the whole of the transport sector. It is recommended that (1) the MOT should renew its commitment to human resource development by a clear statement of policy objectives, including increasing training incentives (through raising qualification standards both for MOT staff and for its external contractors), and training opportunities (upgrading training programs to serve future needs), (2) in accordance with this policy, the Labor and Personnel Department of MOT should work with other ministries to develop a human resource development strategy that covers general technical, management other basic needs in the sector, in addition to the specific training

needs in the transport sector identified by VITRANSS and other studies, (3) the strategy should also cover the specific needs of senior MOT decision-makers and specialists in transport economics, planning and policy analysis.

Strengthen the basis for financing infrastructure and operations: To implement proposed improvements in finance of infrastructure and operations, the subsector agencies need MOT to obtain government support in the short-term for (a) off-budget funds for infrastructure maintenance (initially the proposed road fund), (b) raising additional resources for transport investment (through the transport development fund), and (c) reducing barriers to foreign participation in transport (for increasing potential finance for container terminals and for purchasing ships).

Implement equitization and SOE reforms: MOT is responsible for taking the lead in the equitization program, which requires much to be done in the short-term. This requires the MOT (a) to appoint full time staff to define and implement a timetable for carrying out the equitization program, (b) to establish a monitoring mechanism to allow progress to be assessed and improvements made to the program, (c) to assess the possible need for greater government support to deal with staff redundancies caused by SOE reform, (d) to work with government to enable the SOEs remaining within the large corporations (VINALINES, VINASHIN and VAC) to have greater autonomy, (e) to seek government support for broader reforms such as changing the legal status of public interest SOEs to give them adequate financial autonomy while making them more accountable for use of state assets and for level of service offered, (f) to seek government support to establish ferries, pilotage services and other inherently commercial units as business SOEs rather than as public service SOEs.

Implementing Considerations and Need for Technical Assistance

To make the process manageable, the many recommendations listed above have to be prioritized further, realistic targets defined and initial implementation steps defined in more detail. As a first step, the recommendations have been listed in summary tables in Appendix 8.1 for each mode and Appendix 8.2 for the sector management aspects. Only when further work on implementation is done would it be possible to define realistic implementation schedules. Meanwhile the suggested dates and targets given in the summary tables should only be regarded as tentative suggestions on which to base further discussion.

Once MOT has finalized a realistic implementation plan based on the master plan proposals, to minimize the risk of delays and poor coordination of implementation, consideration should be given to strengthening project and policy implementation capacity in the transport sector: both through defining the implementation process and allocating implementing responsibilities for: (1) finalizing the implementation plan (2) setting up an implementation monitoring system, and (3) anticipating

obstacles to implementation and taking action to remove them (especially where this can usefully and effectively decentralize decision-making).

Much technical assistance has been given in areas such as legal reform, management systems, databases and training, but this has not always been effective and has not covered all key areas. The approach to human resource development has been piece-meal and ineffective, often through short on-the-job training arrangements during projects. Although many training studies have been carried out, they have not been implemented, partly because relative priorities are not clear There is no overall human resource development plan for the transport sector. Donor coordination has been poor. Relatively little assistance has been given to the railway, to MOT or the PTAs.

Past TA projects have made significant achievements such as helping to establish new subsector management organizations such as VRA and the project implementation units. It is clear that to be effective,

- long-term assistance is required in many areas,
- focused on recognized needs,
- with a realistic assessment of resources required,
- aimed at sustaining improvements by effective transfer of know-how and techniques, and providing future financing mechanisms.

The areas in which technical assistance are required to support implementation of the VITRANSS master plan in the next five years include the following:

Sector Management: Continued advice on implementing management organizations and systems within the specialized management departments of MOT (VRA, VIWA etc.), to enable MOT to devolve to these organizations responsibility for planning, maintaining and developing infrastructure and to enable these organizations to fulfill their other oversight functions. Such assistance should be extended to provincial and district transport administrations to enable them to make and evaluate local transport plans and to manage infrastructure and implement central government policies. Complementary assistance to MOT in the following areas:

- strengthening capacity for strategic transport planning, policy formulation and implementation (especially in policy aspects such as cost recovery and regulation),
- legal reform in areas such as incorporating international agreements into Vietnamese law, establishing a legal basis for multimodal transport, and developing guidelines for coordinating the legal framework for the sector as a whole,
- establishing a transport database for decision-makers and experts, to provide reliable information for policy development and for monitoring project/policy implementation, at affordable cost,

- establishing a transport planning database for planners to enable updating of the VITRANSS transport planning model and its continued application for forecasting and evaluating transport development options,
- promoting human resource development in the sector through policies and strategies which increase training incentives and opportunities,
- promoting training of transport managers in concepts such as marketing, costing, financial planning, fleet planning and control, investment evaluation, multimodal transport and containerization,
- upgrading technical secondary and vocational training schools and enable them to become demand-driven rather than supply-driven,
- implementing its equitization plan, especially to define a program and timetable, and assist in implementing it,
- finding ways to improve supply of finance and donor support.

Roads: Short-term priorities for assistance are:

- improvement of highway management capacity in VRA,
- establishing management systems associated with road maintenance,
- establishing uniform technical and functional standards for roads and bridges,
- implementing the proposed five year road safety program as part of NTSC's overall transport safety program,
- rural road planning, to develop rural planning policy-making in MOT [33], to develop planning methods and capacity to implement them at local level,
- provincial transport planning, to strengthen capacity of PTAs to manage provincial roads and waterways,
- establishing provincial road maintenance systems,
- road financing, to study the possible implementation of a road fund,
- planning for development in the long-term of expressways.

Railway: Priorities are to implement:

- a short-term institutional strengthening project to establish a reform strategy and give specific help in reorganization, developing business plans and implementing management systems,
- a longer term institutional strengthening project to implement the reform plans,
- long-term planning of commuter rail services,
- inter-state railway service planning, based on international studies.

Inland Water: Priorities are:

- to complete the ongoing VIWA institutional strengthening project by 2002 and implement the recommendations in the longer term,
- to promote competition and the role of the private sector in transport services, ports and support activities such as dredging.

[33] Technical assistance needs in rural transport planning and implementation have been taken into account in preparing the World Bank/DFID Rural Transport II Project (including strengthening of the MOT's Rural Transport Unit under a DFID funded TA.

Maritime: Assistance is required to:

- improve infrastructure management (especially maintenance of access channels to ports, aids to navigation, search and rescue system),
- commercialize ports (development of policies, introducing management systems, developing business plans, encouraging private sector investment),
- gateway port planning, to make more detailed development plans for the main port areas taking account of economic and environmental aspects,
- enhancement of maritime safety and fleet control, to improve safety standards.

Aviation: Assistance is required to:

- strengthen planning/evaluation capacity of CAAV, and its capacity to implement and enforce regulations developed in accordance with international agreements,
- provide training in commercial aspects of airport management,
- upgrading air safety, through training in use of new CNS/ATM systems,
- provide training in meteorology.

Multimodal: Assistance is also required across all modes to:

- foster multimodal transport operators and services, through regulatory reforms, encouraging private participation in container facilities, establishing representative groups and training in modern multimodal concepts.

Although not included in the scope of work of VITRANSS it is clear that, in addition to the areas of technical assistance identified above, attention should also be given to the many urban and rural transport issues that impact on planning and policy-making/implementation in the transport sector. Whereas there are major efforts being prepared for planning rural transport infrastructure (as mentioned in the list of TA projects), there are no specific plans for urban studies. In view of the special problems encountered in larger metropolitan areas, priority should be given in the short-term to comprehensive planning and engineering studies which address urban transport needs in HCMC and Hanoi.

Appendices

Appendix 6.1 List of Major Ongoing/Committed Projects[1/]

Project	Original Schedule	Implementing Agency	Project Cost (million US$)		Fund Source
			Total	2001-	
I. Road					
1. Highway Rehabilitation Project II (Vinh-Dong Ha; 100km)	1997-2000	MOT	236.6	23.7	WB
2. Highway Rehabilitation Project III (Can Tho-Nam Can; 230km)	2000-2004	MOT	180.0	180.0	WB
3. Highway Rehabilitation Project (Hanoi-Lang Son; 190km)	1997-2000	MOT	162.5	16.3	ADB
4. 2nd Road Development (Nha Trang-Quang Ngai; 600km)	1999-2002	MOT	163.0	81.5	ADB
5. Trans Asia Highway Project (NH22 to Cambodia; 80km)	1999-2002	MOT	144.7	144.7	ADB
6. East-West Corridor Project (ASEAN 8; NH9; 75km)	1999-2003	MOT	30.0	24.0	ADB
7. Bridge Rehabilitation Project - Phase I (435km)	1995-2000	MOT	162.2	16.2	JBIC
8. National Highway No.5 Improvement Project (remaining section, 91km)	1995-2000	MOT	215.6	21.6	JBIC
9. Bridge Rehabilitation Project - Phase II (752km)	1996-2001	MOT	211.0	105.5	JBIC
10. Hai Van Pass Tunnel (2 lanes, 14km)	1998-2003	MOT	251.0	225.9	JBIC
11. NH No.18 Widening Projects - Phase 2 (remaining section, 70km)	1998-2003	MOT	232.0	232.0	JBIC
12. National Highway No.10 Upgrading Project (147km)	1998-2003	MOT	302.0	302.0	JBIC
13. Can Tho Bridge Construction	2000-2004	MOT	294.0	294.0	JBIC
14. Thanh Tri Bridge Construction	2000-2004	MOT	410.0	410.0	JBIC
15. Bai Chay Bridge Construction	2000-2004	MOT	98.0	98.0	JBIC
16. Binh Bridge Construction	2000-2004	MOT	80.0	80.0	JBIC
17. Trans HCMC Highway Project (21.4km)	2000-2004	MOT	758.6	758.6	JBIC
18. My Thuan Bridge (1,535m)	1997-2000	MOT	79.3	15.9	Australia
19. East-West Corridor Project (ASEAN 7A; NH12A, 29; 120km)		MOT	65.0	39.0	GOV
20. Rehabilitation and Upgrading of HCM Highway	2000-2003	MOT	380.0	380.0	GOV
21. NH 14 Rehabilitation Project	2000-2003	MOT	15.0	15.0	GOV
Subtotal			**4,470.5**	**3,463.9**	
II. Railway					
1. Hanoi-HCMC Railway Bridge Rehabilitation	1995-2001	VR	104.0	47.0	JBIC
2. Signal and Telecommunication Systems (Hanoi-Vinh)	1997-	VR	9.4	9.5	France
3. Tunnel Repair at Hai Van Pass (study)	1997-	VR	8.4	8.4	France
Subtotal			**121.8**	**64.9**	
III. Inland Waterway					
1. Ninh Phuc Port Expansion	1995-	VIWA	9.0	7.1	GOV
2. Waterway Improvement in Dong Thap Muoi-Long Xuyen Quadrangle	1996-	VIWA	7.1	5.3	GOV
3. Inland Waterway and Port Rehabilitation	1997-2003	VIWA	73.0	58.4	WB
4. Vietnam Inland Waterways Project	1998-2002	VIWA	0.8	0.4	CIDA
5. Upgrading of Inland Waterway School No.1	1997-2002	MOT	1.2	0.6	Netherlands
Subtotal			**91.1**	**71.8**	
IV. Ports & Shipping					
1. Cai Lan Port Expansion Project	1996-2001	VINAMARINE	108.4	108.4	JBIC
2. Hai Phong Port Rehabilitation Project - Phase 2	2000-2010	VINALINES	141.0	141.0	JBIC
3. Danang Port Improvemnt Project	1999-2003	MOT	113.0	113.0	JBIC
Subtotal			**362.4**	**362.4**	
V. Air					
1. Noi Bai International Airport Development Project	1996-2002	CAAV/NAA	57.1	17.1	GOV
2. New Passenger Terminal Building (T1) Construction at Noi Bai	1995-2001	CAAV/NAA	80.0	24.0	GOV & Credit Loans
3. Expansion of Int'l Passenger Terminal Bldg in Tan Son Nhat	1999-2002	CAAV/SAA	12.0	6.0	SAA
4. Airfield Pavement Overlay in Tan Son Nhat Intern'l Airport	1999-2001	CAAV/SAA	16.0	14.4	SAA
5. New Aircraft	2000-2003	VAC	500.0	400.0	VAC & Credit Loans
Subtotal			**665.1**	**461.5**	
VI. Rural Transport					
1. Rural Transport Project I	1996-2001	MOT	60.9	12.0	WB
2. Rural Transport Project II	2000-2005	MOT	145.3	116.0	WB/DFID/GOV
3. Rural Access Project	1998-2000	MOT	1.3	0.0	DFID
4. Rural Infrastructure Devt and Living Standard Improvement Proj (Loan II) [2/]	1998-2002	MPI	133.0	40.0	JBIC
5. Tra My Rural Infrastructure Development	1998-2001	UNCDF/Dist.	1.3	0.4	AusAID
Subtotal			**341.8**	**168.4**	
VII. Urban Transport					
1. Transport Infrastructure Development in Hanoi	2000-2005	HPC	113.7	113.7	JBIC
2. Urban Transport Improvement	1998-2002	TUPWS (Hanoi,HCMC)	45.0	22.5	WB
Subtotal			**158.7**	**136.2**	

TOTAL	**6,180.2**	**4,717.1**	
TOTAL (excluding fleets, aircraft)	**5,680.2**	**4,317.1**	

1/ Exchange rates: US$ 1 is equivalent to VND 14,000, JY 110, FF 6.18, A$ 1.55 and CAN$ 1.46
2/ Amount of project cost is only for the road

Appendix 6.2 List of Candidate Projects with Brief Description

Sector	Project No.	Project	Description	Cost[1)] (M US$)
Road	***Primary Road Network Development Projects***			
	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	To construct an urban bypass in five major towns (Thanh Hoa, Vinh, Dong Hoi, Dong Ha, Quang Ngai) to ease traffic congestion and segregate through traffic to enhance traffic safety.	67.0
	H14	Hanoi Ring Road	To provide bypass and alternative routes to traffic passing through or going to Hanoi City that will link all major radial arterials in the outskirts of the urbanized area. This project includes constructing new bridges.	256.0
	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	To widen the road to a four-lane dual carriageway to accommodate future traffic demand which is expected to increase rapidly due to industrialization.	76.0
	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	To improve all the narrow, winding sections of the road, one of the important international links between Hanoi and Yunnan, China and the primary access to the northern mountainous provinces.	125.0
	H22	National Highway No.21 Upgrading Project (80km)	To upgrade to the 2-lane design standard. This highway, which will links NH10, NH1, NH6, and NH32, will provide the road network in the south of Hanoi, a potential area of economic growth.	58.0
	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	To upgrade to the 2-lane design standard. This highway is one of ASEAN's primary east-west corridors, linking Vientiane in Lao and Vinh (Cua Lo) Port in Vietnam. .	90.0
	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	To upgrade to the 2-lane design standard in line with H11. This highway is one of ASEAN's primary east-west corridors, linking Pakse in Lao and Danang Port in Vietnam.	14.0
	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	To upgrade the access roads from NH01 to the Central Highlands to primary and secondary design standards. The roads will form a road network that will encourage rural economic development.	150.0
	Secondary Road Network Development			
	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road.	148.0
	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road.	137.0
	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	To improve this primary access between Hanoi and the northern mountainous provinces to the standard of a 2-lane secondary road. This is also the access road to Vientiane via the northern route, Loa.	223.0
	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	To improve NH32, a primary access in the area west of Red river. This road will be within the economic influence area of the future Metropolitan Hanoi.	200.0
	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	To develop the outer, northeastern ring road of the future metropolitan region, linking with primary radial roads.	101.0
	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	To develop the outer, north ring road of the future metropolitan region, linking with primary radial roads.	122.0
	H37	North C1 (West-South Ring, NH70-NH1, NH379/15/47; 295km)	To develop the outer, southwest ring road of the future metropolitan region, linking with primary radial roads. The area is mountainous and has less traffic.	216.0
	H38	North C2 (North-East Ring, NH5-NH3, NH279; 255km)	To develop the northeast ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	171.0
	H39	North C2 (North Ring, NH3-NH70, NH279/1B; 120km)	To develop the north ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	83.0
	H40	North C2 (North-West Ring, NH70-NH6, NH279; 150km)	To develop the northwest ring road in the northern mountainous region that will provide better access to the rural area and promote growth. The area, however, has a steep terrain and less traffic demand.	107.0
	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	To improve the road linking Vietnam and China passing through the coastal area to promote tourism in Ha Long.	92.0
	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	To improve the road to the standard of a 2-lane route to the Red Delta area, southeast of Hanoi. This road will provide a better access to the high-density population and future industrialized area.	124.0
	H43	HCMC-My Tho Road (NH50) Improvement (80km)	To improve the road passing through future urban areas south of HCMC, including construction of one long-span bridge. This will be an alternative route of NH01between My Tho and HCMC via Go Cong.	79.0
	H44	My Tho-Soc Trang Route (NH60) Improvement (120km)	To improve the road linking coastal provinces (from My Tho, Ben Tre, Tra Vinh and to Soc Trang) in the Mekong Delta. Ferries connect the road in 4 main river crossings.	235.0

1/ The cost shown is only the one allocated after 2001

Sector	Project No.	Project	Description	Cost[1] (M US$)
	H45	Can Tho-Ha Tien (NH80) Improvement (200km)	To upgrade the road, an important arterial road for Can Tho and Kien Giang provinces, to promote industrialization in the Mekong Delta.	197.0
	H46	Can Tho-Kien Giang-Ca Mau Route (NH61, 63) Improvement (200km)	To improve the access road in the country's most southern region, including construction of small and medium-size bridges for the many rivers and canals. The area is flood-prone.	197.0
	H47	Ho Chi Minh Highway Extn (NH2) (Chan-Thanh-An Giang; 60km)	To construct two new North-South axes running parallel to NH01, from Chan Thanh (NH13) to An Giang (NH80).	58.0
	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	To improve the secondary cross-border link to Phnom Penh, Cambodia, to a 2-lane design standard.	55.0
	H49	Secondary Road Network rehabilitation Program	To rehabilitate the road and assure minimum traffic function as secondary network. The road has small traffic demand, hence its priority will be comparatively low.	94.0
	H50	Tertiary Road Improvement Project	To rehabilitate the tertiary road network and provide an all-weather access route to all the rural centers.	569.0
	Road Safety			
	H52	Road Safety Improvement Program	To identify accident-prone areas and implement preventive measures including education, enforcement and campaign, etc.	30.0
	Expressway			
	H53	North-South Expressway 1 (Hanoi-Vinh, 310km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, will be in a high economic growth corridor.	930.0
	H54	North-South Expressway 2 (Vinh-Hue, 400km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to have less traffic demand.	1,200.0
	H55	North-South Expressway 3 (Hue-Danang, 100km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to promote economic growth in the central region.	300.0
	H56	North-South Expressway 4 (Danang-Nha Trang, 550km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to have a comparatively low demand.	1,650.0
	H57	North-South Expressway 5 (Nha Trang-HCMC, 420km)	To develop the third North-South axis with modern road facilities. The expressway, which will have a 4-lane dual carriageway and access control, is expected to strengthen tourism development in the area.	1,260.0
	H58	Noi Bai-Ha Long Expressway (150km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to strengthen infrastructure development in one of the leading corridors for industrial development in the north (Hanoi).	750.0
	H59	HCMC-Vung Tau Expressway (90km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to strengthen infrastructure development in one of the leading corridors for industrial development in the south (HCMC).	450.0
	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to alleviate the traffic congestion on NH01 and enhance accessibility between the national (HCMC) and regional centers (Can Tho), thus promoting economic growth. Higher traffic demand is estimated in this section, due to rapid urbanization.	350.0
	H61	HCMC-Can Tho Expressway 2 (My Tho-Can Tho; 80km)	To develop an expressway, which will have a 4-lane dual carriageway. It is expected to alleviate the traffic congestion on NH01 and enhance accessibility between the national (HCMC) and regional centers (Can Tho), thus promoting economic growth. Higher traffic demand is estimated in this section, due to rapid urbanization. (Phase 2)	560.0
		Subtotal		**11,524.0**
Railway	***Rehabilitation and Minor Improvement***			
	R02	Rehabilitation of Tracks & Bridges	To rehabilitate 40 bridges and 1,300 km of tracks, widen formation level width (1,300 km) and introduce Multiple Tie Tampers (MTT) for all VR lines.	325.0
	R04	Hai Van Pass Tunnel	To construct Hai Van Pass tunnel (10 km) with double tracking and install electricity on Danang - Hue section.	389.0
	R05	Signal and Communication Equipment Modernization	To modernize signals and switches, provide optical fiber cable and install Automatic Train Stop (ATS).	128.0
	R07	Alarm at Crossings	To install alarm and barriers at approximately 600 crossings to prevent accidents.	21.0
	Capacity Expansion of Critical Sections			
	R08	New Stations for Train Exchange (100 stations)	To establish new stations for train exchange at sections with more than 10-km distance between existing stations.	26.0
	R09	New Stations for Commuters (30 stations)	To establish new stations for commuters in big cities such as Hanoi and HCMC.	8.0
	R10	Large Scale Freight Stations (30 stations)	To establish large-scale freight stations at every 100-km distance.	486.0

1) The cost shown is only the one allocated after 2001

Sector	Project No.	Project	Description	Cost[1] (M US$)
	R11	Bien Hoa - Saigon section (29.4km)	To install double tracks and electricity on Saigon-Bien Hoa section and to construct grade separation of Saigon-Go Vap at a cost of US$ 80 million.	130.0
	R12	Hanoi – Hai Phong section (101.4km)	To install double tracks and electricity on Hanoi-Hai Phong section and construct grade separation on Hanoi-Gia Lam section at a cost of US$ 98 million.	293.0
	R13	Hanoi - Giap Bat section (5.4km)	To install double tracks and electricity on Hanoi-Giap Bat section and construct grade separation in this section at a cost of US$ 93 million.	32.0
	R14	Giap Bat - Phu Ly section (51km)	To install double tracks and electricity on Giap Bat - Phu Ly section.	129.0
	R15	Gia Lam - Yen Vien section (5.3km)	To install double tracks and electricity on Gia Lam - Yen Vien section.	13.0
	R16	Hanoi - HCMC line (Phu Ly - Hue; 632km)	To install double tracks and electricity on Hanoi-HCMC Line (Phu Ly-Hue).	1,173.7
	R17	Hanoi - HCMC line (Danang - Bien Hoa; 906km)	To install double tracks and electricity on Hanoi-HCMC Line (Danang-Bien Hoa).	1,682.6
	R18	Yen Vien - Viet Tri (62km)	To install double tracks and electricity on Yen Vien-Viet Tri section.	115.1
	R19	Dong Anh - Ton Dong (5km)	To install double tracks and electricity on Dong Anh-Ton Dong section.	9.3
	R20	Bac Hong - Van Dien (40km)	To install double tracks and electricity on Van Dien-Bac Hong section.	74.3
	R21	Single Tracking (Mao Khe - Ha Long; 48km)	To install new 1000-mm gauge track on the Mao Khe-Ha Long section.	75.4
	New Lines			
	R22	Saigon - My Tho (70km)	To construct a new line connecting Saigon and My Tho in the Mekong Delta.	382.0
	R23	My Tho - Can Tho (100km)	To construct a new line extending from My Tho to Can Tho in the center of Mekong Delta.	450.0
	R24	Short-cut Line (Phu Thai - Mao Khe; 15km)	To construct a shorter line connecting Phu Thai in Hanoi-Haiphong line to Mao Ke in Ha Long line.	31.1
	R25	HCMC - Vung Tau (80km)	To construct a new line connecting HCMC (Thu Duc in HCMC-Hanoi line) and Vung Tau.	360.0
	Operation			
	R26	Rolling Stock Acquisition	To install a number of rolling stocks such as diesel/electric locomotives, passenger cars, freight wagons and EMUs.	1,882.0
	R28	CTC and Computerization	To install a CTC (Centralized Train Control) system and computer system for ticketing and work management.	136.0
		Subtotal		**8,351.5**
Inland Waterway	***Port Improvement***			
	W01	Hanoi/Khuyen Luong Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for ports located along the Red River near the capital.	11.0
	W05	Viet Tri Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Red River and Lo River.	3.5
	W07	Hoa Binh Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Da River.	4.0
	W10	Vinh Thanh (Vinh Long) Port Improvement	To expand the berth and purchase cargo handling equipment, such as crane and forklift, for the port located along the Co Chien River connecting with the Tien Giang River.	4.3
	W12	Ca Mau Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Ganh Hao River.	2.9
	W14	Cao Lanh (Dong Thap) Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for the port located along the Tien Giang River.	6.4
	W16	My Thoi (Long Xuyen) Port Improvement	To expand the berth and warehouse and purchase cargo handling equipment, such as crane and forklift, for ports located along the Hau Giang river.	6.2
	W18	Passenger Terminal Development	To construct a wharf and passenger terminal facility at each port in Hanoi and Hai Phong (north) and HCMC and Can Tho (south).	2.2
	W20	Other Local Port Development	To establish a local river port in each province in the delta regions and some provinces in central Vietnam. Each port will have the minimum facility to ensure efficient operation.	47.7
	Waterway Improvement			
	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and the Duong bridge.	13.9
	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and the development of the DNC (Day/Ninh Co) canal.	19.9

1) The cost shown is only the one allocated after 2001

Sector	Project No.	Project	Description	Cost[1)] (M US$)
	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	To dredge the waterway and increase its transport capacity and ensure safe navigation. The project will also involve rehabilitation of groynes and correction of bends.	6.0
	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	To improve the waterway, a potential route for trade with China. Major improvements are dredging, rehabilitation of groynes and Red River embankment in Hanoi.	74.0
	W27	Viet Tri - Tuyen Quang/Hoa Binh Waterway improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	3.6
	W28	Pha Lai - Thai Nguyen/Bac Giang Waterway Improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	3.6
	W33	Thi Vai-Nuoc Man Canal Development	To improve the waterway which is expected to be a new route directly connecting Thi Vai and Saigon Port. Major improvements are capital dredging for expansion of channels.	3.2
	W34	HCMC - Moc Hoa/Ben Keo/Ben Suc Waterway Improvement	To dredge and improve the waterway to increase transport capacity and ensure safe navigation.	6.5
	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	To contribute a new power plant at Son La, upstream from Hoa Binh. Navigation aids will be installed on this route.	2.1
	W36	Cuu Long-Cambodia Waterway Improvement	To dredge Can Tho-Tan Chau route (Hau River) and Cua Tieu-Cho Moi route (Tien River) to allow passage of 5,000 DWT ships. These are important waterways for international transport to/from Cambodia.	20.5
	W37	Island Service Improvement (Co To and Cat Ba Islands)	To install navigation aids on the major route to/from Co To and Cat Ba islands to ensure safe navigation and to support linkage between remote islands and the mainland.	2.5
	W38	Island Service Improvement (Other Islands)	To install navigation aids on these minor routes to ensure for safe navigation and to support linkage between remote islands and the mainland.	4.6
		Operation & Safety		
	W39	IWT Safety Enhancement	To install navigation aids and equipment for rescue and salvage operations thus promoting safe navigation in inland waterway transport.	52.7
	W43	IWT Fleet Development	To install a number of IWT fleets such as tag boats, barges, self-propelled vessels, small boat and oil tanker for cargo and passenger ships.	191.9
		Subtotal		**493.2**
Port & Shipping	***Port Expansion/Development***			
	P05	Cua Lo Port Project	To expand berths (660 m), purchase cargo handling equipment and construct anti-siltation dike to increase port capacity from 0.3 million tons/year to 2.6 million tons/year. The project will contribute to East-West transport corridor development.	49.3
	P07	Danang Bay - Lien Chieu Port Development	To construct a new port in the central region, located 15 km west of Danang city. The port, designed to cater to 30,000 DWT container vessels, will have a depth of -12 m.	158.0
	P10	Specialized Port for Dung Quat Industrial Zone	To construct general-cargo berths (820 m), berths for discharging crude oil and loading domestic oil for Oil Refinery No.1 and the planned industrial zone in Dung Quat.	130.0
	P12	Qui Nhon Port Development	To expand berths and the pier and purchase cargo handling equipment to increase port capacity up to 3.5 million tons/year.	36.0
	P14	Nha Trang Port Development	To expand berths, pier and storage area and purchase cargo handling equipment to increase port capacity up to 2 million tons/year.	57.0
	P16	Ho Chi Minh City General Port	To expand the ports in the HCMC area to increase their capacity from 17.5 million tons/year to more than 21 million tons/year.	200.0
	P18	Baria Vung Tau General Port	To expand the ports in Baria Vung Tau and increase their capacity to accommodate the estimated 21 million tons of general cargoes including containers. Baria Vung Tau province is the industrial center of southern Vietnam.	206.0
	P20	Can Tho Port Development	To increase port capacity up to 3 million tons/year by upgrading and widening of berths, ware house and yards, and new port zone at Cai Sau, and improvement of access channel from river mouth.	64.0
	P22	Industrial Port Development	To improve facilities of industrial ports handling bulky cargoes such as cement, coal and petroleum. There are 4 cement ports, 2 coal ports and 2 oil ports.	67.0
	P24	Other Local Ports	To improve berths and cargo handling equipment at local ports. There are 4 ports in the north and 9 ports in the central.	22.7
	Operation & Safety			
	P26	Port EDI System at Gateway Ports	To install EDI (Electronic Data Interface) system at international ports, VINAMARINE and port authorities.	10.0

1/ The cost shown is only the one allocated after 2001

Sector	Project No.	Project	Description	Cost[1] (M US$)
	P27	Large-scale ICD Development Project	To establish two large scale ICD (Inland Container Depot) at convenient intermodal connection sites in the north and south of VN.	72.2
	P29	Fleet Expansion and Modernization Program	To expand and modernize oceangoing vessels, coastal serving vessels including container and container equipment.	1,407.0
	P31	Development of Aids to Navigation (ATN)	To install ATN (Aids to Navigation) equipment and facilities including visual ATN, electronic ATN and other ATN support equipment and facilities.	63.6
	P33	Maritime SAR and Oil Spill Protection	To install maritime SAR (Search and Rescue) equipment such as rescue ships, high-speed canoe, lift buoy and life raft and to purchase oil spill protection equipment for the area of Hai Phong, Danang and Vung Tau.	52.8
	P35	Seafarers' Education Upgrading Project	To upgrade facilities, training program, curricula, syllabi and instructors of VIMARU (Vietnam Maritime University in Hai Phong and HCMC) and MTTS (Maritime Technical and Training School in Hai Phong and HCMC).	20.9
		Subtotal		**2,616.5**
Air	***Airport Expansion/Development***			
	A03	Noi Bai Airport Development Project - Phase 1	To expand passenger terminal building up to capacity of 6-6.5 million per annum. Existing domestic passenger terminal building is converted to cargo terminal.	53.9
	A05	Danang International Airport Development Project - Phase 1	To expand capacity of Danang International Airport to be able to handle 3 million passengers per annum.	77.7
	A09	Tan Son Nhat International Airport Development Project	To construct new international passenger terminal building with capacity of 8 million passengers per annum. The existing international terminal building is used for domestic passengers.	226.7
	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	To expand the capacity of secondary airports such as Cat Bi in Hai Phong, Phu Bai in Hue and Nha Trang.	85.6
	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	To construct new airport in Cao Bang and Lao Cai in the north and Dong Hoi and Chu Lai in the central.	83.6
	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	To improve airport facilities to enhance safety and meet future traffic demand. The project covers the nine airports of Dien Bien Phu, Na San, Vinh, Plei Ku, Phu Cat, Lien Khuong, Buon Ma Thuot, Rach Gia and Phu Quoc.	120.8
	Air Traffic Control			
	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	To replace the existing HCM ACC with a new equipment and construct a new building for air traffic management using CNS/ATM systems and techniques at Noi Bai Airport.	58.0
	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	To Install an Instrument Landing System (ILS) and DVOR/DME in secondary airports (Cat Bi, Phu Bai and Nha Trang).	4.5
	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	To install control tower packages and Automatic Weather Observation Stations (AWOS) in 4 new airports (Cao Bang, Chu Lai, Dong Hoi and Lao Cai).	1.3
	A19	Communication and Navigational Equipment Replacement Program	To replace antiquated navigational equipment and install new equipment such as DME in Phan Thiet, 6 NDBs, voice logging equipment and other communications and navigation equipment.	12.2
	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	To install various equipment to meet the new CNS/ATM requirements for 2001-2005 (Radar Renewal, ATN, Multimode VHF, HF Digital Link, SAR and ATIS).	32.8
	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	To install various equipment to meet the new CNS/ATM requirements for 2006-2010 (AIS, GAS, MET, ADS-B and other communication and navigation equipment).	10.9

1) The cost shown is only the one allocated after 2001

Cont. Table Appendix 6.2

Sector	Project No.	Project	Description	Cost[1] (M US$)
	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	To restructure ATS-DS Circuits and prepare them for the transfer of control to Hanoi ATM Center. To restructure the AFTN Circuit and prepare it for the transfer of all Vietnam Airspace to Hanoi.	2.5
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	To upgrade the training facilities in CATCV such as the Air Traffic Control (ATC) procedural trainer, ATC radar simulator, multimedia language laboratory and other necessary training equipment.	3.0
	A24	Flight Calibration of Navigation Aids	To contract out, through an annual bidding process, to a specialist agency the certification of the safe and satisfactory performance of the navigation aids in Vietnam.	1.1
	A25	Test Equipment Replacement and the Equipment Standards Laboratory	To replace old and worn-out test instruments used for the maintenance of communications and navigation aids and establish a laboratory for the calibration of test equipment.	1.9
	Aircrafts			
	A33	Aircraft Purchase	To purchase new aircraft to cope with future passenger demand and provide better service.	1,889.0
		Subtotal		**2,665.5**
		TOTAL		**25,650.7**

1) The cost shown is only the one allocated after 2001

Appendix 6.3 Assessment of Master Plan Candidate Projects

Ranking	Project No.	Project	Project Cost 2001-(US$ mil)	Total Cost (US$ mil)	Economic Indicator	Network Integ-ration	Int'l Link-age	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW Acquisition	Judgement (VIT-ANSS)
1	P14	Nha Trang Port Development	57	57	130	c	b	a	b	c	a	A
2	P05	Cua Lo Port Project	49	106	98	c	b	a	b	c	a	A
3	H19	National Highway No.1 Hanoi - Ninh Binh Widening Project (80km)	76	182	54	b	c	c	b	b	c	A
4	P16	Ho Chi Minh City General Port	200	382	49	c	b	a	b	c	a	A
5	R08	New Stations for Train Exchange (100 stations)	26	408	47	b	c	b	b	b	c	A
6	A09	Tan Son Nhat International Airport Development Project	227	635	44	c	a	c	c	a	a	A
7	P12	Qui Nhon Port Development	36	671	41	c	b	a	b	c	a	A
8	W22	Quang Ninh-Hanoi/Pha Lai Waterway Improvement	14	685	41	b	c	a	c	c	b	A
9	A03	Noi Bai Airport Development Project - Phase 1	54	739	39	c	a	a	c	a	a	A
10	A24	Flight Calibration of Navigation Aids	1	740	44	b	a	a	c	a	a	A
11	A25	Test Equipment Replacement and the Equipment Standards Laboratory	2	742	44	c	c	b	c	a	a	A
12	A16	Reconstruction of HCM Area Control Center and Noi Bai Air Traffic Management Center	58	800	39	c	a	a	c	a	a	A
13	A22	Restructuring of Air Traffic Service - Direct Speech (ATS-DS) Circuits and Aeronautical Fixed Telecommunications Network (AFTN)	3	802	39	b	a	a	c	a	a	A
14	W24	Quang Ninh-Nam Dinh/Ninh Binh Waterway Improvement	6	808	33	b	c	a	c	c	a	A
15	H10	National Highway No.1 Urban Bypass (Hanoi-HCMC; 70km)	67	875	35	c	c	c	b	b	c	A
16	W25	Hanoi-Viet Tri-Lao Cai Waterway Improvement	74	949	33	b	b	b	c	c	b	A
17	W23	Ninh Binh/Nam Dinh-Hanoi Waterway Improvement	20	969	32	b	b	b	c	c	b	A
18	P10	Specialized Port for Dung Quat Industrial Zone	130	1,099	30	c	c	a	b	c	a	A
19	R02	Rehabilitation of Tracks & Bridges	325	1,424	29	b	b	c	a	a	a	A
20	W01	Hanoi/Khuyen Luong Port Improvement	11	1,435	26	c	b	a	a	b	a	A
21	W10	Vinh Thai (Vinh Long) Port Improvement	4	1,440	28	c	b	b	a	b	a	A
22	W33	Thi Vai-Nuoc Man Canal Development	3	1,443	30	b	c	b	c	b	b	A
23	P33	Maritime SAR and Oil Spill Protection	53	1,496	30	c	c	c	a	a	a	A
24	R05	Signal and Communication Equipment Modernization	128	1,624	29	c	b	c	a	a	a	A
25	R07	Alarm at Crossings	21	1,645	29	c	c	c	a	b	a	A
26	W16	My Thoi (Long Xuyen) Port Improvement	6	1,651	24	c	b	b	a	b	a	A
27	W12	Ca Mau Port Improvement	3	1,654	25	c	c	b	a	b	a	A
28	H49	Secondary Road Network rehabilitation Program	94	1,748	22	a	c	c	a	b	b	A
29	W14	Cao Lanh (Dong Thap) Port Improvement	6	1,754	23	c	b	b	a	b	a	A
30	P20	Can Tho Port Development	64	1,818	23	c	b	a	b	c	a	A
31	A05	Danang International Airport Development Project - Phase 1	78	1,896	24	c	a	b	c	a	b	A
32	H14	Hanoi Ring Road	256	2,152	25	c	c	c	b	b	c	A

Ranking	Project No.	Project	Project Cost 2001-(US$ mil)	Total Cost (US$ mil)	Economic Indicator	Network Integ-ration	Int'l Link-age	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW Acquisition	Judgement (VIT-ANSS)
33	A11	Secondary Airport Development Project (Cat Bi, Phu Bai, Nha Trang)	86	2,237	23	c	b	b	c	a	a	A
34	A19	Communication and Navigational Equipment Replacement Program	12	2,250	24	b	a	a	c	a	a	A
35	A20	Equipment Installation and Upgrading Project for New CNS/ATM -Phase 1	33	2,282	24	c	a	a	c	a	a	A
36	H50	Tertiary Road Improvement Project	569	2,851	18	a	c	c	a	b	b	A
37	A14	Rehabilitation of Tertiary Airports - Phase 1 (9 airports)	121	2,972	23	c	c	c	c	a	a	A
38	W20	Other Local Port Development	48	3,020	23	c	c	c	a	b	a	A
39	H20	National Highway No.70 Upgrading Project (Hanoi-Lao Cai; 191km)	125	3,145	16	b	a	c	a	b	c	A
40	R28	CTC and Computerization	136	3,281	22	c	c	c	c	a	a	A
41	W18	Passenger Terminal Development	2	3,283	22	c	c	b	a	b	a	A
42	P22	Industrial Port Development	67	3,350	22	c	c	a	b	c	a	A
43	P24	Other Local Ports	23	3,373	22	c	c	b	b	c	a	A
44	P31	Development of Aids to Navigation (ATN)	64	3,436	22	c	b	a	a	a	a	A
45	P18	Varia Vung Tau General Port	206	3,642	18	c	a	a	b	c	a	A
46	P07	Danang Bay - Lien Chieu Port Development	158	3,800	16	c	a	a	b	c	a	B
47	H27	Rehabilitation (NH19, 20, 24, 26, 27, 28)	150	3,950	17	a	c	c	a	b	b	B
48	W36	Cuu Long-Cambodia Waterway Improvement	21	3,971	16	b	a	a	c	b	a	B
49	P26	Port EDI System at Gateway Ports	10	3,981	22	c	a	a	a	a	a	B
50	P27	Large-scale ICD Development Project	72	4,053	22	c	b	a	a	b	a	B
51	H60	HCMC-Can Tho Expressway 1 (HCMC-My Tho; 50km)	350	4,403	18	b	c	a	c	c	c	B
52	W05	Viet Tri Port Improvement	4	4,407	17	c	b	b	a	b	a	B
53	H23	East-West Corridor Project (ASEAN 7; NH8, 8B; 110km)	90	4,497	18	b	c	c	a	b	b	B
54	H36	North C1 (North Ring, NH3-NH70, NH37; 115km)	122	4,619	20	b	c	c	b	b	b	B
55	H45	Can Tho-Ha Tien Improvement (NH80) (200km)	197	4,816	19	b	b	c	b	c	b	B
56	H41	Cua Ong-Bac Luan (NH18) Road Improvement (130km)	92	4,908	19	c	b	c	b	b	b	B
57	H31	Hanoi-Cao Bang (NH3) Improvement (310km)	148	5,056	14	a	b	c	a	b	b	B
58	H35	North C1 (North-East Ring, NH5-NH3, NH37; 150km)	101	5,157	19	b	c	c	b	b	b	B
59	A13	New Airport Construction Project (Cao Bang, Lao Cai, Dong Hoi, Chu Lai)	84	5,240	19	c	c	c	b	b	b	B
60	A17	Provision of Navigation Aids in Secondary Airport (Cat Bi, Phu Bai, Nha Trang)	5	5,245	19	b	a	a	c	a	a	B
61	A18	Provision of Control Tower System Packages and Automatic Weather Observation Stations (AWOS) in 4 New Airports	1	5,246	19	c	c	a	c	a	b	B
62	A21	Equipment Installation and Upgrading Project for New CNS/ATM - Phase 2	11	5,257	19	c	a	a	c	a	a	B
63	H42	Hung Yen-Thai Binh Road (NH39) Improvement (100km)	124	5,381	19	c	c	c	b	b	b	B

Ranking	Project No.	Project	Project Cost 2001-(US$ mil)	Total Cost (US$ mil)	Economic Indicator	Network Integ-ration	Int'l Link-age	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW Acquisition	Judgement (VIT-ANSS)
64	W35	Da River and Hoa Binh Port Improvement in Hoa Binh Lake	2	5,383	19	b	c	c	c	a	a	B
65	R12	Hanoi - Haiphong section (101.4km)	293	5,676	16	b	b	b	b	c	c	B
66	H46	Can Tho-Kien Giang-Ca Mau Route (NH61,63) Improvement (200km)	197	5,873	16	a	c	c	b	c	b	B
67	H32	Hanoi-Ha Giang (NH2) Improvement (300km)	137	6,010	13	a	b	c	a	b	b	B
68	H43	HCMC-My Tho Road (NH50) Improvement (80km)	79	6,089	17	b	c	c	b	c	b	B
69	H48	NH22B Improvement (Go Dau-Xau Mai; 80km)	55	6,144	16	b	b	c	b	b	b	B
70	R13	Hanoi - Giap Bat section (5.4km)	32	6,176	16	c	c	b	b	c	c	B
71	H26	National Highway No.40 Upgrading Project (ASEAN 7B,24km)	14	6,190	14	c	b	c	a	b	b	B
72	H34	Hanoi-Lai Chau (NH32) Improvement (390km)	200	6,390	12	a	c	c	a	b	b	B
73	H33	Hanoi-Dien Bien Phu (NH6) Improvement (468km)	223	6,613	10	a	b	c	a	b	b	B
74	H22	National Highway No.21 Upgrading Project (80km)	58	6,671	15	b	c	c	c	c	c	B
75	R04	Hai Van Pass Tunnel	389	7,060	13	a	c	c	c	c	a	B
76	R11	Bien Hoa - Saigon section (29.4km)	130	7,190	13	b	c	b	b	b	c	B
77	W37	Island Service Improvement (Co To and Cat Ba Islands)	3	7,192	15	b	c	c	a	a	a	B
78	W38	Island Service Improvement (Other Islands)	5	7,197	15	b	c	c	a	b	a	C
79	H54	North-South Expressway 2 (Vinh-Hue, 400km)	1,200	8,397	14	b	c	b	c	b	c	C
80	W27	Viet Tri - Tuyen Quang/Hoa Binh Waterway Iimprovement	4	8,401	14	b	c	b	c	c	a	C
81	H58	Noi Bai-Ha Long Expressway (150km)	750	9,151	12	b	c	a	c	c	c	C
82	W07	Hoa Binh Port Improvement	4	9,155	12	c	c	b	a	b	a	C
83	W34	HCMC - Moc Hoa/Ben Keo/Ben Suc Waterway Improvement	7	9,161	15	b	c	c	c	c	a	C
84	H57	North-South Expressway 5 (Nha Trang-HCMC, 420km)	1,260	10,421	12	b	c	a	c	c	c	C
85	R22	Saigon - My Tho (70km)	382	10,803	14	b	c	b	c	b	c	C
86	H53	North-South Expressway 1 (Hanoi-Vinh, 310km)	930	11,733	11	b	c	a	c	c	c	C
87	H61	HCMC-Can Tho Expressway 2 (My Tho-Can Tho; 80km)	560	12,293	11	b	c	a	c	c	c	C
88	H44	My Tho-Soc Trang Route Improvement (NH60) (120km)	235	12,528	13	b	c	c	b	b	b	C
89	R20	Bac Hong - Van Dien (40km)	74	12,602	13	b	c	c	b	b	c	C
90	H59	HCMC-Vung Tau Expressway (90km)	450	13,052	12	b	c	b	c	c	c	C
91	R09	New Stations for Commuters (30 stations)	8	13,060	13	c	c	b	b	b	c	C
92	R10	Large Scale Freight Stations (30 stations)	486	13,546	13	b	c	b	c	b	c	C
93	R16	Hanoi - HCMC line (Phu Ly - Hue; 632km)	1,174	14,720	11	b	c	c	b	c	c	C
94	H55	North-South Expressway 3 (Hue-Danang, 100km)	300	15,020	11	b	c	b	c	b	c	C
95	W28	Pha Lai - Thai Nguyen/Bac Giang Waterway Improvement	4	15,024	12	b	c	c	c	c	a	C

Ranking	Project No.	Project	Project Cost 2001-(US$ mil)	Total Cost (US$ mil)	Economic Indicator	Network Integ-ration	Int'l Link-age	Cost Recovery	Social/ Equity/ Poverty	Environ-ment	Resettle-ment/ ROW Acquisition	Judgement (VIT-ANSS)
96	H56	North-South Expressway 4 (Danang-Nha Trang, 550km)	1,650	16,674	11	b	c	b	c	b	c	C
97	R15	Gia Lam - Yen Vien section (5.3km)	13	16,687	11	c	c	c	b	c	c	C
98	R17	Hanoi - HCMC line (Danang - Bien Hoa; 906km)	1,683	18,369	11	c	c	c	b	c	c	C
99	R18	Yen Vien - Viet Tri (62km)	115	18,484	9	b	c	c	b	b	c	C
100	H37	North C1 (West-South Ring, NH70-NH1, NH37/15/47; 295km)	216	18,700	7	b	c	c	b	c	c	C
101	R21	Single Tracking (Mao Khe - Ha Long; 48km)	75	18,776	7	b	c	c	b	a	a	C
102	R14	Giap Bat - Phu Ly section (51km)	129	18,905	6	b	c	c	b	c	b	C
103	H38	North C2 (North-East Ring, NH5-NH3, NH279; 255km)	171	19,076	2	b	c	c	b	c	b	C
104	R24	Short-cut Line (Phu Thai - Mao Khe; 15km)	31	19,107	3	b	c	c	c	b	c	C
105	H47	Ho Chi Minh Highway Extension (N2)(Chan-Thanh-An Giang; 60km)	58	19,165	1	b	c	c	b	b	b	C
106	R25	HCMC - Vung Tau (80km)	360	19,525	1	b	b	c	c	b	c	C
107	H39	North C2 (North Ring, NH3-NH70, NH279/1B; 120km)	83	19,608	0	b	c	c	b	c	b	C
108	H40	North C2 (North-West Ring, NH70-NH6, NH279; 150km)	107	19,715	-2	b	c	c	b	c	c	C
109	R19	Dong Anh - Ton Dong (5km)	9	19,724	-4	c	c	c	b	b	c	C
110	R23	My Tho - Can Tho (100km)	450	20,174	-6	b	c	c	c	b	c	C
	H52	Road Safety Improvement Program	30		-	c	c	c	a	a	c	A
	W39	IWT Safety Enhancement	53		-	c	c	b	a	a	a	A
	P35	Seafarers' Education Upgrading Project	21		-	c	b	c	a	a	a	A
	A23	Rehabilitation of Civil Aviation Training Center of Vietnam (CATCV)	3		-	c	a	a	c	a	a	A
	R26	Rolling Stock Acquisition	1,882		-	c	c	c	c	a	a	A
	W43	IWT Fleet Development	192		-	c	b	a	a	b	a	A
	P29	Fleet Expansion and Modernization Program	1,407		-	c	b	a	a	a	a	A
	A33	Aircraft Purchase	1,889		-	c	a	a	c	a	a	B

Note: Evaluation Criteria

1. Economy — EIRR (%)
2. Network Integration
   - a: Significant
   - b: Moderate
   - c: Insignificant
3. International Linkage
   - a: Strong
   - b: Moderate
   - c: None
4. Cost Recovery
   - a: Possible
   - b: Limited
   - c: None
5. Social Equity/Poverty
   - a: Significant
   - b: Less significant
   - c: Neutral/Negative
6. Environment
   - a: No negative impact
   - b: Minor negative impact
   - c: Negative impact
7. Resettlement/ROW Acquisition
   - a: No constraints
   - b: Minor constraints
   - c: Major constraints
8. Judgement (VITRANSS)
   - A: High priority
   - B: Medium priority
   - C: Low priority

Appendix 8.1 Policy and Institutional Reform Actions at Subsector Level

Sub-sector	Action	Main Responsibility
ROAD	*(1) Competitive Framework*	
	• Establish the road act within two years and the implementing regulations within three years, with (a) clear/enforceable technical standards, (b) no quantity controls or fares controls by provinces on non-urban bus services, (c) no additional minimum financial requirements other than those defined in the business licence, and (d) consistency with international requirements such as for vehicle size and weight regulations for container trucks	MOT
	(2) Institutional Changes	
	• Incorporate the short-term recommendations of the World Bank's Road Safety Strategy Study in the Traffic Safety Strengthening Program proposed to government by NTSC to reduce the number and severity of road accidents: (a) establishing an accident database, (b) including road safety audits in all road improvement designs, (c) developing measures to prevent encroachment of roads, (d) improving education/publicity on road safety, (e) improving driver training and enforcement. (f) This requires increasing the NTSC road safety budget from about US$ 1.5 million to US$ 3 million and including a greater input initially from international specialists to establish a firm cost-effective foundation for the safety program.	Government, MOT and other NTSC members
	• Implement fully the recommendations of the ADB's Institutional Strengthening TA to MOT/VRA, deepen the reforms of VRA and extend them to provincial/district levels to enable the whole of the primary and secondary networks (and at least 20% of tertiary roads) to be under proper maintenance within five years	MOT, VRA, PPC, PTAs
	• Target training at road management aspects such as pavement and maintenance management and contracting procedures	MOT, VRA, PPC, PTAs
	(3) Funding	
	• Depending on the results of the forthcoming World Bank workshop, establish a road fund within two years for regular maintenance activities, using off-budget funds raised from road users, with a management board responsible to the MOT or the Ministry of Finance. Allocate to the fund: (a) VND 250 per litre of diesel and gasoline consumed in Vietnam, initially, to establish the fund without increasing the budget allocation to road maintenance, (b) then raise the allocation step-by-step by introducing an axle weight fee and by increasing the gasoline levy by about 50% within five years This could raise road maintenance finance from about US$ 80 million to US$ 150 million	MOT with Ministry of Finance
	(4) Operations/Management	
	• Equitize all remaining bus and truck SOEs under MOT and provinces within three years	MOT, PPC
RAILWAY	*(1) Competitive Framework*	
	• Establish the railway act within two years and implementing regulations within three years	MOT/VR
	• Establish railway inspection unit within MOT within one year to oversee safety aspects	MOT
	(2) Institutional Changes	
	• Establish VR as a corporation, within one year, with six separate HQ business departments for passenger, freight, operations, rolling stock maintenance, infrastructure and administration (with equivalent units within each region or union)	MOT
	• The HQ and the three regions jointly prepare realistic business plans within three years for passenger, freight and other support departments	VR
	• Develop management systems (MIS, costing tools, business/financial planning, marketing) within two years, and implement on a pilot basis within three years before applying throughout the railway within four years.	VR

Sub-sector	Action	Main Responsibility
RAILWAY	*(3) Funding*	
	• Introduce low cost marketing measures within two years (ticketing, customer information and customer relations etc.)	VR
	• Based on the business plans, establish a performance agreement within four years between MOT Planning and Implementation Department and VR to define the medium-term contractual basis for VR's payment for infrastructure (fixed annual fee plus proportion of revenue earned) and government subsidy (clear operational/financial targets and obligations on each side)	MOT/VR
	• Remove remaining controls on railway fares and tariffs, including the two tier fare structure for foreigners and Vietnamese, within two years	GPC
	(4) Operations/Management	
	• Rehabilitate and renew existing equipment and infrastructure to sustain carrying capacity in the next three years at minimum investment	VR
	• Define the technical standards for future development of infrastructure and new purchases of equipment with modern technology within two years	VR
	• Define new operating procedures and rules for adoption of new technology within three years.	VR
	• Train management and staff in new systems, manuals and procedures resulting from the organisational reforms and proposed use of new technology within four years.	VR
INLAND WATER	*(1) Competitive Framework*	
	• Establish the inland water transport act within two years and implementing regulations within three years, with (a) clear/enforceable technical standards (b) no restrictions on area or route of operation (only restrictions based on classification of waterway) (c) no additional minimum financial requirements other than those defined in the business licence	MOT/VIWA
	(2) Institutional Changes	
	• Establish improved VIWA management systems according to Canada-Vietnam TA project, including new organization, basic management systems, vessel inspections, procurement/contracting framework, environmental monitoring plan, and waterways maintenance plan within three years. On-the-job training provided throughout.	VIWA
	• Implement Canada-Vietnam TA pilot project with new policies, plans and systems in 2002	VIWA
	• Replicate pilot project nationally in 2003	VIWA
	(3) Funding	
	• Improve fee collection system to improve cost-effectiveness and assess potential for even greater cost-effectiveness by replacing waterway-use fees with vessel-based fees, within one year.	VIWA
	• Depending on the results of the proposal to establish a road fund, implement within three years a water transport fund on a similar basis (or extend the scope of the road fund). Establish the water fund with a fuel levy of VND 27 per litre of diesel consumed in Vietnam. This could provide US$ 9 million in 2005 (50% higher than current waterway maintenance expenditure)	MOT/VIWA
	(4) Operations/Management	
	• Equitize all inland water transport SOEs within five years	MOT/Provinces
	• Transfer port ownership to provinces and commercialize port management by issuing management contracts within five years	Government/MOT /Provinces
	• Lease out port facilities to private investors to provide container handling facilities in at least one pilot project within five years	Provinces
MARITIME	*(1) Competitive Framework*	
	• Formulate regulations, within one year, for ship inspections and other aspects, as required to meet international agreements	VINAMARINE

Sub-sector	Action	Main Responsibility
MARITIME	*(2) Institutional Changes*	
	• Clarify responsibilities between VINAMARINE and VIWA for infrastructure management by assigning responsibility to VINAMARINE for all coastal areas (except in designated cases) and designated rivers from the coast (to Haiphong, Saigon and Can Tho Ports) within one year	MOT
	• Divest remaining ports and other commercial functions from VINAMARINE within one year	MOT
	• Target training at improving port state control inspectors, to implement minimum international technical standards of ships, and infrastructure management	VINAMARINE
	• Strengthen VINAMARINE capacity to manage maritime sector (improving dialogue with shipping industry and shippers, planning and infrastructure maintenance)	VINAMARINE
	(3) Funding	
	• Secure private investment in container handling facilities in general purpose ports, in accordance with their planned future role (through leasing, joint venture, or BOT) in at least one port within five years	VINAMARINE
	• Unify coastal shipping and ocean shipping charges for use of maritime infrastructure within one year	VINAMARINE
	• Remove GPC control over port charges and allow ports to base charges on their costs within one year	Ministry of Finance
	(4) Operations/Management	
	• Equitize remaining maritime service SOEs within one year	MOT
	• VINALINES should immediately adopt a passive ownership role towards remaining shipping and port SOEs to foster competition, (a) avoiding direct financial assistance, and (b) replacing the present uniform levy charged to members with a lower levy but charging additional fees for management services offered to its members	MOT
	• Commercialization of ports by establishing each port as an independent corporation with management board having local shippers and other representatives - by introducing reform at one port on a pilot basis within two years and applying the reforms to all other main ports within five years	MOT
	• Contract out handling and other services in order to foster competition within two more ports within two years, and within all remaining ports in five years	VINALINES
	• Target training at port management (management systems, modern handling methods) and skilled staff (use of modern equipment)	VINALINES
AVIATION	*(1) Competitive Framework*	
	• Incorporate international technical standards and agreements into Vietnamese law within two years by implementing the regulatory changes recommended by the French/Vietnamese TA.	CAAV
	• Phase out current fare controls to allow more market-based fares and to remove the two tier fare structure for foreigners and Vietnamese, within two years. Keep option to impose maximum fares controls under monopoly conditions.	GPC
	(2) Institutional Changes	
	• Strengthen management capacity of CAAV within four years through adopting modern traffic forecasting, facility life cycle management, and planning techniques that involve a broad range of stakeholders in airports. Requires training support.	CAAV
	• Strengthen sector management within five years by introducing/revising legal basis for airport authorities and VATM to focus on core regulatory oversight responsibilities, not commercial activities such as airport ground services and training.	CAAV
	• Provide training on introducing new CNS/ATM system within five years	VATM
	(3) Funding	
	• Base airport charges on the infrastructure provision costs at each port, base air traffic control charges on ATM service costs, and remove discounts to Vietnamese airlines within two years in accordance with international agreements	CAAV

Sub-sector	Action	Main Responsibility
AVIATION	*(4) Operations/Management*	
	• To foster real competition in the domestic market, VAC's ownership of Pacific Airlines should be reduced to that of passive investor, concerned only with obtaining minimum return on investment and not with business strategy.	MOT
	• Aviation support units such as supply companies, air service companies, catering and goods handling should be divested from VAC, starting with three pilot cases within three years, followed by the rest within five years.	VAC
	• New airport corporations should be established to manage the commercial airport and infrastructure management functions in each of the three areas covered at present by the airport authorities. Local interests should be represented on the management boards. Initially, in the next five years, one such corp. should be created as a pilot case.	Government/ CAAV
	• Provide training in airport management, including passenger service, business development strategies, costing, financial planning, and contracting, to enable increased commercialisation of airport management and ultimate creation of airport corporations.	CAAV
MULTI-MODAL	*(1) Regulatory Framework*	
	• Establish the legal framework for freight carriage (limits of liability, legal basis for multimodal transport operators and basis for freight forwarders to act as principals rather than agents) within three years, based on international agreements	MOT
	• Seek support from government to reform customs regulations, to allow modern clearance systems and use of efficient logistics systems within three years.	MOT
	• Accede to main international agreements on international trade and transport, and incorporate these into Vietnamese law within three years	MOT
	(2) Institutional Changes	
	• Seek support for training in multimodal operations from international operators within three years	MOT
	(3) Funding	
	• Encourage private financing by planning development of container ports and inland depots within two years and providing land and good access links within five years	MOT
	• Seek to remove government restrictions in foreign investment in transport within three years	MOT
	(4) Operations/Management	
	• Seek international support for assistance in establishing a shippers council in Vietnam to represent users within three years	MOT
RURAL	*(1) Regulatory Framework*	
	• Phase out transport tariff controls in mountainous areas to establish a level playing field and allow sustainable financing of rural transport services (if necessary with subsidies awarded by competitive tendering to least-cost operators)	GPC
	(2) Institutional Changes	
	• Establish within one year and train, over the next three years, a rural transport unit in MOT	MOT
	• Strengthen capacity for managing rural transport in provincial and district PTAs (planning and evaluation of infrastructure development, maintenance management)	MOT/PTAs/VRA
	(3) Funding	
	• Establish a firm basis for financing rural road/water maintenance and development, based on the recommendations of the Rural Transport Strategy Study	PTAs/Ministry of Finance/MOT
CROSS-BORDER	*(1) Regulatory Framework*	
	• Seek bilateral agreements with neighboring countries that allow efficient, through movement of transport vehicles/vessels between countries within five years	MOT
	• Ensure that Vietnamese transport legislation is consistent with international agreements and main protocols within five years	MOT
	(2) Institutional Changes	
	• Seek support from government to streamline customs and other procedures within three years	MOT
	(3) Funding	
	• Establish a monitoring system for cross-border flows, by transport type and traffic type, to identify potential bottlenecks so that investments can be targetted where they are most needed, within one year	MOT

Appendix 8.2 Policy and Institutional Reform Actions for Sector Management

Actions	Main Responsibility
(1) Establish a Coordinated Regulatory Framework	
• Work with the Specialized Departments for each mode to develop new MOT guidelines to subsector legal departments, within one year, on basis of drafting future regulation of each mode in order to unify legislation within the sector and make implementation easier. Covering: (a) aspects of the overall legal framework that need strengthening or better coordination, such as the safety, environmental and multimodal aspects highlighted by VITRANSS, (b) level of detail in modal acts and implementing regulations, (c) whether to treat infrastructure and transport activities under the same modal act or as separate acts, (d) scope of licensing provisions, following scrapping of past business licences, to set minimum safety standards while minimizing barriers to competition (e) proposed future responsibilities and authority of central government agencies and PPCs/PTAs over licensing or pricing (for example to guide urban bus services), (f) the economic basis for minimum technical standards (for example based on vehicle condition, not age) (g) how to take account of possible umbrella law on transport and future international agreements that Vietnam is intending to sign up to.	MOT/ VRA/ VR/ VIWA/ VINAMARINE
• Phase out remaining transport price controls within two years to allow prices to reflect the prices of each mode and each operator (see Appendix 8.1 for details). Possibly establish the GPC as a competition regulatory body within five years	GPC/Ministry of Finance
(2-1) Institutional Changes - Strengthening Planning and Policy-Making Capacity of MOT	
• Develop an institutional reform plan aimed at strengthening MOT in its core areas (covering organizational changes, functional definitions, management tools/procedures, staffing and training)	MOT
• Concentrate planning and policy-making functions of MOT in a single department (Planning and Investment) by transferring to it the non-legal functions of the Transport and Legal Department within one year	MOT
• Improve strategic planning through adopting modern planning and evaluation methods and clear guidelines to delegate planning tasks. Within three years.	MOT
• Develop the VITRANSS model as a policy/planning tool to continue analysis of policy options (infrastructure maintenance versus new construction, development options within each corridor, optimum location and type of ports etc.). Define work program within three years and carry out program within five years.	MOT/TDSI
• Develop systems for financial analysis (to assess cost recovery policies), and for operational analysis (to assess infrastructure capacity utilization, transport efficiency and competition) within five years	MOT
• Develop a project and policy implementation monitoring system, within one year, based on the VITRANSS recommendations (master plan investments and policy recommendations - see Appendix 8.1) to assess extent of implementation and enforcement, and need for removal of bottlenecks	MOT

Actions	Main Responsibility
(2-2) Institutional Changes - Improve the Supply of Reliable Information to Decision-Makers	
• Identify information needs of MOT and its agencies for making policy and its implementation, within one year.	MOT
• Identify the means to provide reliable information to decision-makers. Implement within three years.	MOT
(2-3) Institutional Changes - Coordinate Institutional Changes Throughout the Sector	
• As part of its current review of responsibilities in the transport sector, renew the MOT's commitment to delegating powers and responsibilities for infrastructure management to MOT's specialized departments.	MOT
• Complete the current government review of organization responsibilities by the production of legal documents defining the organization, function, tasks and duties of all provincial and MOT agencies involved in transport sector management, to clarify responsibilities, to avoid overlap and establish clear lines of authority and responsibility between them. In particular: (a) Finalize decrees defining the organization, functions, tasks and duties of these departments. (b) Review current procedures for implementing projects through PMUs to streamline administration and reduce delays, by (i) reducing the need for the PMUs to refer decisions up to ministerial level, and (ii) reducing the need for MOT to refer decisions to other ministries. (c) Rationalize other MOT units to reduce reporting lines, to avoid duplicated functions, and to establish institutes and support agencies as either part of the ministry, non-profit-making agencies or as commercially independent units (d) Seek support from government, within one year, for the minister of transport to appoint the PTA director, or at least to veto appointments on technical grounds Prepare draft documents within one year and implement within two years	MOT
• Revise Decree No. 22-CP defining MOT's organization to implement the ministerial changes within two years	MOT
• Take the lead in improving the management of provincial and district transport infrastructure, by: (a) setting technical and planning standards for infrastructure, and procedures for monitoring their application, (b) establishing procedures for ensuring that local plans are consistent with national plans, (c) establishing, in coordination with the Ministry of Finance, detailed guidance documents and procedures for financing local infrastructure, (d) strengthening capacity at provincial and district level for managing infrastructure (not just national and rural infrastructure, but also the intermediate road network and similar provincial infrastructure)	MOT
• Establish joint circulars between MOT and other ministries such as the Ministry of Police, within one year, to provide a basis for exchange of information and other important areas of cooperation	MOT/other ministries
• Establish liaison groups chaired by the MOT with representatives from transport users to disseminate policies and gain support for policy measures such as raising user charges. Establish the first group, for road financing, within one year.	MOT

Actions	Main Responsibility
(2-4) Institutional Changes - Coordinate Human Resource Development	
• MOT renews its commitment to human resource development by a clear policy statement, with specific objectives, including increasing (a) training incentives (higher minimum qualification standards for MOT staff and for external contractors) and (b) training opportunities (reorient training programs to serve real needs). Declare policy within one year and define human resource development programs within three years.	MOT/Subsector Agencies
• Strengthen the Labor and Personnel Department of MOT to develop, within three years, human resource development policies and strategies for the transport sector, including (a) reviewing with the Minister of Labor, qualification levels for skilled technicians, and policies for improving technical training, (b) training needs for senior decision-makers and specialists/experts, (c) training needs for managers of transport enterprises, (d) implementing the specific training needs identified by VITRANSS in inland water, maritime and aviation transport.	MOT
• Coordinate ODA-funded training courses to broaden impact and improve cost-effectiveness (within one year). Identify priority training subjects within two years and develop train-the-trainer courses and upgrade transport training institutes in priority subjects.	MOT/Provinces
(3) Strengthen the Basis for Financing Infrastructure	
• Seek support from government for establishing, within two years, off-budget funds for financing infrastructure maintenance for roads and inland water transport (see Appendix 8.1 for details)	MOT/Ministry of Finance
• Seek support from Ministry of Finance and transport users, within three years, for mobilization of development resources, with a greater contribution from users (higher fuel levy and/or vehicle/vessel import and ownership taxes)	MOT with Ministry of Finance
• Seek support from government and transport users for reducing, within two years, restrictions on foreign investment in transport	MOT/MPI
• Develop plans for possible private investments in ports and other infrastructure within two years, and seek government and user support to remove investment bottlenecks	MOT/MPI
(4) Implement the Equitization and SOE Reforms in the Transport Sector	
• Appoint full time staff in MOT to handle equitization program within one year and give priority to equitizing small-scale transport service and support SOEs under MOT and provinces (see Appendix 8.1). Define priority short-term program within two years and monitor implementation in order to adapt the procedures to improve effectiveness	MOT/Provinces
• Assess, within one year, the possible need for additional compensation or assistance for staff made redundant through equitization or commercialization, and seek government support to reduce bottlenecks to reform of transport SOEs such as ports and railway.	MOT
• For SOEs not for equitizing in the short term, such as ports, shipping and railway, establish these as independent corporations to foster competition (as described in Appendix 8.1). Negotiate performance contracts if necessary to provide a basis for financial support. Establish the first three corporations within one year as pilot cases, before implementing nation-wide.	MOT/ Government

Actions	Main Responsibility
• To foster competition amongst SOEs remaining within VINALINES, VINASHIN and VAC, limit the power of these corporations, within one year, to intervene directly in SOE business affairs, but improve monitoring of financial performance.	MOT/ Government
• Promote an efficient and internationally-competitive construction industry by including construction units in the short-term equitization program and setting higher qualification standards step-by-step each year (to give incentives for training and modernization). Consider establishing an equipment leasing organization to give broader access for contractors to modern specialist equipment within three years.	MOT
• Establishing ferries and similar enterprises as business SOEs (not as public service SOEs) to allow introduction of greater efficiency incentives and competition	MOT
• Seek government support within two years for establishing infrastructure maintenance units as more financially independent SOEs to allow introduction of greater efficiency incentives and competition	MOT

VITRANSS Members List (1)

Steering Committee

1.	Mr. Nguyen Viet Tien (Chairman)	: Vice Minister, MOT
2.	Dr. Nguyen Quang Bau (Vice Chairman)	: Director, TDSI
3.	Dr. Tran Doan Tho (Vice Chairman)	: Director General, Planning & Investment Dept., MOT
4.	Mr. Nguyen Ngoc Nhat	: Director General, Infrastructure Dept., MPI
5.	Dr. Dinh Xuan Huong	: Vice Director General, CAAV
6.	Mr. Nguyen Trong Bach	: Vice Director General, VR
7.	Mr. Nguyen Vinh Loc	: Vice Director General, Int'l Relations Dept., MOT
8.	Mr. Bui Duc Nhuan	: Vice Director General, VINAMARINE
9.	Mr. Ly Huy Tuan	: Vice Director General, Transport & Legislation Dept., MOT
10.	Mr. Ngo Thinh Duc	: Vice Director General, VRA
11.	Mr. Ngo Xuan Son	: Director General, VIWA

Task Force

1.	Dr. Doan Thi Phin (Chirman)	: Vice Director, TDSI
2.	Dr. Nguyen Nhan	: Vice Director General, Personnel & Labour Dept., MOT
3.	Mr. Nguyen Toai	: Senior Expert, Infrastructure Dept., MPI
4.	Mr. Nguyen Quang Vinh	: Vice Director, Infrastructure & Urban Dept., DSI
5.	Mr. Dinh Viet Thang	: Vice Division Manager, Planning & Investment Dept., CAAV
6.	Mr. Nguyen Tien Toi	: Senior Expert, Planning & Investment Dept., VR
7.	Mr. Nguyen Huu Chi	: Vice Director, Planning & Investment Dept., VINAMARINE
8.	Mr. Nguyen Ngoc Hoi	: Senior Expert, VRA
9.	Mr. Pham Minh Nghia	: Director, Planning & Investment Dept., VIWA
10.	Ms. Trinh Thi Hang Nga	: Expert, Transport & Legislation Dept., MOT
11.	Mr. Nguyen Quy Hung	: Chief, Integrated Researching Division, TDSI

JICA Advisory Committee

1.	Dr. Shigeru MORICHI	: Chairman
2.	Mr. Yoichi SUZUKI	: Regional Development
3.	Dr. Tetsuro HYODO	: General Transport Planning
4.	Mr. Toshiharu TAKAHASHI	: Railway Planning
5.	Mr. Kiyoshi SARAI	: Road Planning
6.	Mr. Yutaka MIYAJI	: Port & Maritime Transport Planning
7.	Mr. Akira MORIKI	: Port & Maritime Transport Planning
8.	Mr. Hiroyoshi KAGAMI	: Airport & Air Transport Planning

JICA

1.	Mr. Takao KAIBARA	: Director, First Social Development Study Division
2.	Mr. Hidenori KUMAGAI	: Deputy Director, First Social Development Study Division
3.	Mr. Tetsuro IKEDA	: First Social Development Study Division
4.	Mr. Kazuya NARUKAWA	: First Social Development Study Division

(Vietnam Office)

5.	Mr. Takanori JIBIKI	: Resident Representative
6.	Mr. Takashi HATAKEYAMA	: Deputy Resident Representative
7.	Mr. Yuichi SUGANO	: Assistant Resident Representative
8.	Mr. Kazuhuko KIKUCHI	: Assistant Resident Representative

VITRANSS Members List (2)

JICA Study Team

1.	Dr. Shizuo IWATA	: Team Leader/Transport Planning
2.	Mr. Takashi SHOYAMA	: Deputy Team Leader/Demand Forecast/Transport Planning Modeling (1)
3.	Mr. Tetsuo WAKUI	: Deputy Team Leader/Transport Planning Modeling (2)/ Economic and Financial Evaluation
4.	Mr. Ken KUMAZAWA	: Regional Socio-economic Framework (1)/Cargo Transport Policy (2)
5.	Ms. Theresa J VILLAREAL	: Regional Socio-economic Framework (2)/Cargo Transport Policy (3)
6.	Mr. Kazuharu OIDE	: Cargo Transport Policy (1)
7.	Mr. Mitsuhiro SASANUMA	: Institution and Finance (1)
8.	Mr. Makoto ITO	: Institution and Finance (2)
9.	Mr. Richard TILGHMAN	: Institution and Finance (3)
10.	Dr. Ian JENKINS	: Management and Operation
11.	Mr. Michimasa TAKAGI	: Road Planning
12.	Mr. Tomokazu WACHI	: Land Transport, Regional Transport
13.	Mr. Toshio UENO	: Road Facility Planning
14.	Mr. Katsusuke YAMAGUCHI	: Natural Environment Consideration
15.	Mr. Akitoshi IIO	: Social Environment Consideration
16.	Dr. Promitivo CAL	: Transport Policy
17.	Dr. Tetsuji MASUJIMA	: Transport Survey (1)/Analysis
18.	Dr. Hunki LEE	: Transport Survey (2)
19.	Mr. Masayuki ISHIYA	: Database
20.	Mr. Hisashi KOSHIMIZU	: Railway Facility Planning
21.	Mr. Tatsuo NAKAGAWA	: Railway Operation Planning
22.	Mr. Toshihiko KAMEMURA	: Port Planning
23.	Mr. Shinichi TAGAWA	: Inland Water Transport Planning
24.	Mr. Takasuke MATSUSHITA	: Water Transport Policy
25.	Mr. Takao YAMAGUCHI	: Airport Planning (1)
26.	Mr. Masato TAMURA	: Airport Planning (2)
27.	Mr. Geoffrey THOMPSON	: Air Safety Planning
28.	Mr. Edlin ROGUEL	: Website (1)
29.	Mr. Tsuyoshi KUROSAKA	: Website (2)
30.	Mr. Tamaoki WATANABE	: Project Coordination

Vietnam Counterpart Team

1.	Dr. Doan Thi Phin	: Head of VCT/Deputy Director, TDSI
2.	Mr. Nguyen Quy Hung	: Chief, Integrated Researching Division, TDSI
3.	Mr. Phan Thanh Binh	: Chief, Strategy Division, TDSI
4.	Dr. Cao Ngoc Chau	: Deputy Chief, Forecast Division, TDSI
5.	Mr. Tran Minh Phuong	: Forecast Division, TDSI
6.	Mr. Duong Van Chung	: Rural Transport Division, TDSI
7.	Mr. Bui Cao Chinh	: Chief, Mechanism Division, TDSI
8.	Mr. Le Minh Tuan	: Computer & Informatics Division, TDSI
9.	Mr. Nguyen Dinh Nghien	: Deputy Chief, Planning Division, TDSI
10.	Dr. Nguyen Dang Minh	: Chief, Planning Division, TDSI
11.	Mr. Tran Nhuan	: Deputy Chief, Planning Division, TDSI
12.	Dr. Nguyen Van Chuong	: Deputy Chief, Planning Division, TDSI
13.	Mr. Hoang Tien Hung	: Deputy Chief, Planning Division, TDSI
14.	Mr. Hoang Duc Tan	: Chief, Computer & Informatics Division, TDSI
15.	Mr. Trinh Duc Thang	: Price & Norm Division, TDSI
16.	Ms. Nguyen To Ha	: International Relations Division, TDSI
17.	Ms. Nguyen Viet Ha	: International Relations Division, TDSI
18.	Ms. Lam Thi Phuong	: Computer & Informatics Division, TDSI
19.	Mr. Le Ngoc Chung	: Computer & Informatics Division, TDSI